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SOME QUARANTINE ASPECTS OF AVIATION MEDICINE: WITH SPECIAL REFERENCE TO INTERNATIONAL AGREEMENTS AND REGULATIONS.¹

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"QUARANTINE, like other activities of organized society, has been subject to the law of evolution", and an efficient quarantine code is adaptable to the changing conditions and circumstances of epidemic menace with constant watchfulness. Kipling has expressed this in "The Spies March":

Where plague has spread his pinions over Nations
and Dominions . . .
What does he next prepare?
Whence will he move to attack?
By water, earth or air?
How can we head him back?

Quarantine practice may be considered to date back as far as Moses, when a code of rules, contained in the thirteenth and fourteenth chapters of Leviticus, defined the measures to be adopted in the case of "lepers". In the sixth century the great plague epidemic, usually referred to as the Plague of Justinian, began in Egypt. It is referred to by Creighton ("History of Epidemics") in the following terms:

¹ Read at a meeting of the Special Group on Aviation Medicine (British Medical Association) in Sydney on February 25, 1952.

No single thing stands out more clearly as the stroke of fate in bringing the ancient civilization to an end, than the vast depopulation and solitude made by the plague which came with the corn ships from Egypt to Byzantium in the year 543.

Maritime quarantine as we know it commenced in 1348, when the overseers of public health in Venice were authorized to spend public money for the purpose of isolating infected ships, goods and persons at an island in the lagoon. At that date the "Black Death" was menacing Europe, having been brought direct from the Crimea to Genoa in 1347 by Italian traders. Infection appeared in Genoa a day or two after the arrival of the ship, and the epidemic spread through Europe, causing widespread and fearful mortality in England.

Other adjoining States followed the example of Venice and established their own quarantine stations.

The insistence of a port on the protection of its own interests at all costs is described by a Flemish chronicler of 1348. He recorded that:

Three galleys touched at Genoa driven by a fierce blast from the East; horribly infected and laden with divers spices and other weighty goods. When the men of Genoa learned this and saw how suddenly and irremediably they infected other folk they were driven forth from that port by fiery arrows and divers engines of war; for no man dared touch them; nor could any man deal with them in merchandise but he would die forthwith. Thus they were scattered from port to port till at length one of these aforesaid galleys came to Marseilles at whose coming all who took no precautions were infected and died forthwith. So this galley was driven forth from Marseilles and those who were left on it found the other two wandering about the sea.

The first quarantine station of which there is any distinct record was established in 1403 at the island of Santa Maria di Nazareth at Venice. The Venetian authorities in 1548 framed a complete code of quarantine regulations, which served as a model for others up to a comparatively recent period. All persons coming from the Levant were compelled to remain in the House of Lazarus for a period of forty days before admission into the city. From this is derived the term "lazaret", which has persisted until now. The origin of the "forty days" is doubtful. Collingridge says:

It seems probable that it was derived from the Jewish ceremonial and was continued under various systems and laws until it became a settled period the origin of which was lost and the only justification for which was its antiquity.

In England in 1664 there were adopted quarantine regulations which aimed particularly at control of infection coming from the Levant. These included provisions that no vessel should leave any port in Turkey or Egypt without a bill of health, and no bill of health was to be given until the expiration of forty days from even a single case of plague.

It was the Black Death which produced the quarantine system. The first *Quarantine Act* was passed in England in 1710. The system was revised in the *Quarantine Act* of 1825, which remained in force until 1896 and formed the basis of the first Australian quarantine acts.

It was the cholera of 1848-1850 in Europe which brought about the first steps to obtain international cooperation in maritime quarantine. Steam was then beginning to take the place of sail. The *Great Britain*, 289 feet in length, built of iron, and the first screw steamer to cross the Atlantic, ran her trials in 1847. In 1853 she came into the Australian run. The *Great Eastern*, 672 feet, was commenced in 1853. Speed and range of voyages were increasing, and in 1859 work on the Suez Canal was to be commenced. The canal was opened for traffic in 1869.

The first conference to deal with international cooperation in maritime quarantine was called by France in 1851. It was largely abortive, but further conferences were held, resulting in the formation in 1909 of the *Office international d'hygiène publique* with headquarters in Paris.

In Australia the first extensive outbreak of smallpox occurred in Sydney in 1881. In 1884 the disease was extensively prevalent in New South Wales, Victoria and South Australia. Each of the Australian States had its own laws and practices, which differed considerably, and so the New South Wales Government invited the other States to send representatives to confer on the best means of establishing an effective system of quarantine for Australia. Conferences were held in 1844, 1896, 1900 and 1904. This last conference drew up a number of recommendations, which were subsequently embodied in the *Quarantine Act* of 1908, which with some amendments is still in operation.

Australia has never known cholera or yellow fever except on vessels arriving off the coast, but it has known epidemics of smallpox and plague and has learned how great a loss of human life and how serious a hindrance to traffic and how great a burden of cost are produced by these diseases.

In the Commonwealth *Quarantine Act* and Regulations, measures directed against smallpox take a prominent place, though the proximity of Asiatic endemic and epidemic centres of plague and cholera and the dangers threatening Australia from these sources are fully recognized.

Modern international quarantine practice was really established by the convention drafted at Paris in 1912, and it is of interest that this coincided with the evolution of a uniform system throughout Australia following the creation of the Commonwealth Quarantine Service in 1909.

The war of 1914-1918 deferred a revision of the 1912 convention until 1926, when the first International Sanitary Convention was produced at Paris. Australia was represented at this conference, which was attended by the delegates of 67 countries.

With the development of international air traffic it soon became apparent that some such similar code must be drawn up to apply to aerial navigation.

When in 1919 Ross and Keith Smith with Sergeants Bennett and Shiers arrived at Darwin by air from England, quarantine formalities were completed in accordance with the existing *Quarantine Act*. In 1920 this Act was specifically amended to apply quarantine procedure to any vessel which was defined as "any ship, boat or other description of vessel or vehicle used in navigation by sea or air". Under Australian conditions this procedure covered local circumstances, but the need soon arose for a code which might be applied uniformly by all countries. This related especially to the risk of exportation of yellow fever into countries free of the disease but possessing the known vector, the *Aedes aegypti* mosquito.

The *Office international d'hygiène publique* in consultation with the International Commission on Aerial Navigation considered the question, and by 1931 a draft convention had been prepared which was circulated to all governments; after various conferences signature was opened at The Hague on April 12, 1933.

In Australia adhesion to the convention was considered in relation to the proposed air mail service from England via Singapore. The then Director-General of Health, Dr. J. H. L. Cumpston, presented a report on the whole subject to the Minister of Health. This was published in *The Medical Journal of Australia* for September 2, 1933. In it Dr. Cumpston said:

The adoption of air traffic between nations has involved the careful consideration of entirely new conditions which vary for each country much more than the conditions of land or sea traffic. Australia owes its freedom from the great epidemic diseases of the older countries to her insular condition and geographical remoteness which have meant absence of land traffic and a valuable delay of several days between the overseas infected port and the first Australian port. Air traffic will largely nullify this isolation, especially as to the time factor and the degree to which it will entail new risks or increase existing risks must be considered in detail. The principal advantage which air traffic offers to international commerce is speed and it is therefore necessary that all measures should be so devised that this advantage is not nullified.

It was eventually decided that the provisions of the final text were acceptable with the exception of the arrangements for certification of vaccination against cholera and smallpox. In the geographical circumstances of Australia it was felt that inadequate safeguards against unqualified certification were provided.

Arrangements were finally made for Commonwealth signature with the following reservation:

H.M. Government in the Commonwealth of Australia reserve the right to accept only those certificates which are signed by a recognized official of the Public Health Service of the country concerned.

The convention came into force on August 1, 1935.

Meanwhile in Australia quarantine procedure for aircraft arriving from overseas had been prescribed in Quarantine (Air Navigation) Regulations, 1934. Routine quarantine procedure was established in Australia when the regular overseas air mail commenced with the departure of the Imperial Airways liner *Arethusa* for Koepang on December 13, 1934, and the arrival of the *Athena* at Darwin on December 18, 1934.

In 1943 the Council of the United Nations Relief and Rehabilitation Administration recommended that governments should cooperate with the administration in establishing uniformity in quarantine regulations, as a result of which an amended Sanitary Convention for Aerial Navigation was approved in 1944 and came into effect on January 15, 1945. Considerable alterations were made in articles dealing with yellow fever so as to harmonize the requirements with the progress of knowledge of this disease and with the increasing speed of air travel. International forms of certificates of inoculation and vaccination were drafted.

In 1946 the health functions of UNRRA were transferred to the World Health Organization. At the first Health Assembly in 1948 an Expert Committee on International Epidemiology and Quarantine was entrusted with the study of the best means of relieving public health administrations

from the constant menace of epidemic outbreaks of quarantinable diseases. As a result of a meeting in November, 1948, the Committee adopted the task of framing a code of World Health Organization Sanitary Regulations to replace the present International Sanitary Conventions, which were held to be awkward and obsolete in many respects.

On May 25, 1951, the Fourth World Health Assembly unanimously approved the new World Health Organization Sanitary Regulations. These regulations, approved by 64 member States, provide for the first time a single set of rules concerning international traffic. Governments wishing to make reservations will require to submit them to the Fifth World Health Assembly, and the regulations will then go into force on October 1, 1952, in all countries other than those of the Communist bloc.

It thus took exactly a century from the first Paris Conference in 1851 to arrive at this state of development of international relations.

The regulations comprise 10 parts. The first three deal with definitions, notifications, epidemiological information and sanitary organization. The two following parts include general sanitary measures applicable to all the quarantinable diseases and provisions relative to each of them in particular. The other parts deal with sanitary documents, sanitary charges and various provisions, final and temporary, with regard to the application of the regulations. A series of appendices gives models of various documents.

The regulations recognize that complete protection against the introduction of pestilential diseases depends on the eradication of the existing foyers. The maximum measures which may be applied are in general less restrictive than the former conventions. A fundamental principle is that complete information regarding the occurrence of any case of quarantinable disease must be promptly available from all parts of the world and the Epidemiological Intelligence Branch of the World Health Organization has been greatly strengthened.

An appropriate committee has been set up to review the regulations from time to time in the light of acquired experience.

The present regulations refer mainly to plague, cholera, yellow fever, smallpox, typhus and relapsing fever, but it was decided to set up an appropriate committee to consider additional regulations which may be necessary in regard to other diseases. A problem yet to be solved is the prevention of international transport of malaria vectors.

Measures against plague have apparently been centred on the control of rodents rather than human "cases". The delineation of yellow fever endemic zones has been radically changed. At present measures are taken against very large areas in Africa and South America where the virus is known to exist among jungle animals with no human "cases". Under the new regulations the presence of *Aedes aegypti* also is required before a locality can be included in the endemic zone.

A very important decision was taken with respect to smallpox. A vaccination certificate may be required of every person making an international journey. The smallpox certificate was simplified so that travellers will not have to wait for the readings of the results of vaccination. It must be stated on the certificate whether a successful primary vaccination or a revaccination is in question. Alterations were made in the measures to be taken against typhus in view of the simpler methods of control now available with DDT and similar preparations.

In the case of cholera it was decided to make provisions in the regulations for the possibility of placing under surveillance for five days persons coming from an infected local area even if they possessed a valid vaccination certificate and of isolating those who did not possess one. It was also decided that no one could be required to submit to rectal swabbing, and that only passengers coming from an infected local area could be subjected to examination of stools during the incubation period of cholera and even then only if they showed symptoms suggesting the disease.

Bills of health are abolished. Maritime declarations of health, deratization or exemption certificates or vaccination certificates against smallpox, cholera and yellow fever are the only international documents that may be required. Typhus, plague or other vaccinations may not be required as a condition of entry to a territory. The health declaration for an aircraft will continue to be part of the general declaration. A vaccination certificate issued to a member of the armed forces is acceptable in lieu of an international certificate. The period of validity of the yellow fever certificate is extended to six years instead of four. The new smallpox vaccination certificate may be used from December 1, 1951, for any State which within three months of the adoption of the regulations declares that it does not intend to make reservations in that respect.

The regulations set forth the ideal sanitary conditions with which ports and airports should comply as regards possibilities for dealing with rats and with insects, isolation of infected persons, medical service *et cetera*.

The Fourth World Health Assembly also decided to establish with the International Civil Aviation Organization a joint committee on the hygiene of airports, which will draw up standards for sanitation as well as draft supplementary regulations on this subject.

It may be of interest to give a brief résumé of the present quarantine practice in Australian airports.

The object of the quarantine inspection is as follows: (i) To prevent the entry into Australia of any of the quarantinable diseases. (ii) To control the entry of other infectious diseases. (iii) To prevent the entry of insect vectors of diseases of human beings, animals or plants and of the entry of plant diseases. (iv) To prevent the entry into Australia of persons other than returning Australians who may through ill health or infirmity become a burden on the State.

The *Quarantine Act*, 1908-1950, has been amended at various times to give the necessary powers to deal with unusual risk from aerial traffic.

Quarantine (Air Navigation) Regulations were first promulgated in 1934 and were based on the *Quarantine Act* and the International Sanitary Convention for Aerial Navigation. The regulations have been amended in 1936, 1937, 1947 and 1948.

The principal requirements of the regulations are as follows:

1. That the master or pilot in command is required to send by telegraph or wireless a message to the quarantine officer at the port at which it is intended the aircraft should land, stating the registered marking of aircraft and the date and time of expected arrival, the name of the last port outside Australia and information relating to health on board. The message should be sent so as to be received at least three hours before the arrival of the aircraft at the airport of entry.

2. The master is required to cause to be treated all compartments of the aircraft which are capable of harbouring insects or disease vectors by an approved method so as to ensure the complete destruction of all insects and disease vectors.

3. When required by a quarantine officer the aircraft shall be submitted to fumigation, spraying or such other treatment as may be required by approved methods.

4. The master is required to furnish to the quarantine officer at the first airport of entry a general declaration properly filled in and signed in the presence of the quarantine officer and a passenger manifest containing the names of all passengers and the full address in Australia of each passenger.

5. Every passenger is required to present to the quarantine officer a personal declaration regarding his recent movements, state of health and various inoculations.

6. Each person on board is required to produce to the quarantine officer a certificate in the international form stating that he has been satisfactorily vaccinated within three years prior to embarkation. A person failing to

produce an acceptable certificate is required to be vaccinated at the airport of entry.

7. In the case of cholera every person originating his journey in an "area" proclaimed as infected by that disease must produce a certificate of inoculation, performed not less than six days or more than six months before the date of arrival.

Certificates of vaccination or inoculation must be signed or endorsed by a medical officer of a health department or corresponding authority of the country in which the certi-

ambulance to the quarantine station for treatment, isolation and detention.

A table of annual arrivals from overseas (Table I) is given for the principal ports of entry at Darwin and Sydney. It shows the growth since 1934 of commercial aviation and the large number of potential disease carriers who now enter Australia by air.

Regular trans-Pacific services commenced in February, 1946; arrivals at Sydney in the years since then have been as shown in Table II.

TABLE I.
Aeroplanes Making Darwin Their First Port of Entry.

Year.	Number of Aeroplanes.	Number of Crew.	Number of Passengers.	Remarks.
1919	1	4	—	Ross Smith, Keith Smith, Bennet, Shiers.
1920	1	2	—	Parer and McIntosh.
1926	1	2	—	Cobham and Ward.
1928	2	3	—	Hinkler (solo).
1929 ¹	1	1	—	Lancaster and Mrs. Miller.
1930	5	6	—	Chichester. ²
				Piper and Kay.
				Amy Johnson.
				Matthews.
				Hill.
				Kingsford-Smith.
1931	4	7	—	
1932	11	24	—	Three of these were seaplanes. ³
1933	2	6	1	
1934	25	61	3	Year of the England-Melbourne Centenary Air Race. Three aeroplanes in this year were seaplanes.
1935	62	130	67	
1936	98	185	128	
1937	109	219	187	
1938	206	816	454	About one-third of these aeroplanes were flying boats.
1939	230	1100	803	Three-fifths of these aeroplanes were flying boats.
1940	157	808	1289	Two-thirds of these aeroplanes were flying boats.
1950	677	5494	14,231	

¹ In 1929, Moir and Owen made a forced landing at Cape Don and came on to Darwin by boat. The aeroplane and crew were not inspected for quarantine purposes.

² In 1932 one aeroplane landed between Wyndham and Darwin. It had a crew of four, but neither it nor its crew were inspected for quarantine purposes.

cate is given and shall specify the office held by the person signing the certificate.

Various other regulations relate to quarantine signals by day and night, to approach by unauthorized persons, to taking of declarations, and to penalties provided for offences.

A schedule is appended to the regulations showing the forms required.

Immediately the aeroplane lands, the quarantine officer boards and obtains the necessary documents, which he peruses, questioning the pilot in command regarding illness on the voyage. If no obvious illness is apparent the passengers and crew are allowed to disembark, being inspected by the quarantine officer on entering the waiting room, where they are kept isolated until he is satisfied regarding their health.

They are interviewed individually, vaccination histories are inquired into, any further necessary medical examination is carried out, vaccinations are performed where certificates are not acceptable, and details of passengers' addresses are adjusted.

Everything being satisfactory, written pratique is given.

A quarantine assistant boards with the quarantine officer to inspect the aeroplane for insects, dead or alive, and to collect them for identification. The aeroplane may be sprayed immediately on arrival if it is considered necessary or advisable.

Should any case of quarantinable disease be discovered or reasonably suspected the aeroplane and all its complement and cargo are ordered into quarantine, and all passengers and crew are removed by land transport or

TABLE II.

Year.	Number of Aeroplanes.	Number of Crew.	Number of Passengers.
1946	8	80	174
1947	96	1377	4093
1948	308	2293	7017
1949	421	2338	6380
1950	393	2461	7372
1951	403	2668	8367

The figures in Table II do not include the large numbers of service aeroplanes—British, Australian, Dutch and American—during the war years and afterwards. All such service aeroplanes are, of course, subject to quarantine, and during the war years this responsibility was largely met through the efficient cooperation of the medical services of the Royal Australian Air Force with the Commonwealth Department of Health.

The rapid development of air transport has brought and will continue to bring new problems to every health and quarantine administration. It may be said, however, that so long as existing measures are adequately applied and maintained, there is no cause for fear that these air services cannot be controlled from the aspect of preventing the importation of infectious disease into Australia from abroad. But the continued watchfulness of the quarantine service is essential with close cooperation between the air services themselves and the responsible authorities at all aerodromes on the international air routes.

Acknowledgements.

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TRAUMATIC RUPTURE OF ABDOMINAL VISCERA.

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THE management of trauma being now such a large and important part of the practice of surgery, it becomes necessary to study again the various injuries in the new guises they assume in this motor-accident age, and to adjust our ideas of the frequency of their occurrence, of the essential points in early and accurate diagnosis, and of the changing needs in the surgical treatment of these injuries. Fracture surgeons and cranial surgeons have rewritten large chapters of their practice in the light of the modern varieties of trauma; but it seems that abdominal injuries, which are also changing in character and increasing in frequency, have not received the renewed attention which their importance merits.

With this thought in mind, I submit a record of a number of such cases which have been in my practice, indicating that they also have new features not recognized

in any of the standard works on this subject. The old features of the orthodox type of injury are in any case worthy of periodical review.

Rupture of the Spleen.

Rupture of the spleen is the commonest major injury caused by non-penetrating violence to the abdomen. I have performed splenectomy on thirteen occasions for rupture, these representing about half the total number of such major abdominal injuries in my own experience. These injuries to the spleen may result from a direct blow from behind (most often), or from a crushing injury from front to back, or from a fall on to the abdomen, or from a sharp thrust under the ribs.

The following are typical examples of the usual variety resulting from a direct blow from behind.

CASE I.—A girl, aged thirteen years, was hit by a motor-car when she ran out from behind a tram. She suffered from concussion, but on her admission to hospital was fully conscious, and she complained of abdominal pain. Left upper abdominal tenderness and rigidity were detected. The pulse rate was 118 per minute. There was no shoulder pain. Operation performed three hours after the accident revealed a ruptured spleen; there was a large bleeding lacerated wound on the anterior surface.

CASE II.—A girl, aged ten and a half years, was hit by a motor-car when she got out of a motor omnibus. She sustained a fractured skull. She was pale and suffering from shock on her admission to hospital, and her pulse rate was 128 per minute. Rupture of the spleen was diagnosed on the findings of left upper abdominal tenderness and rigidity, and this was confirmed at operation performed five hours after the accident.

In this case it appeared that the head-lamp of the motor-car struck the patient on the left side from behind.

CASE III.—A youth, aged nineteen years, was struck by a motor-car while riding a bicycle. He was observed in the casualty department for twenty-four hours, when he was found to have a rigid abdomen with some fullness. There was tenderness on palpation maximal in the left upper abdominal quadrant. His pulse rate was then 96 per minute. Laparotomy disclosed a rupture of the spleen—a split in the splenic notch which was bleeding.

CASE IV.—A man, aged twenty-three years, was struck by a motor-car when riding a bicycle. Fractured left lower ribs and hæmothorax were diagnosed on the X-ray appearances. There appeared then to be no evidence of abdominal injury. Twenty-four hours later left upper abdominal rigidity and a rising pulse rate were observed. Rupture of the spleen was diagnosed, and this was confirmed at operation.

In the next case, crushing injury from in front was the cause of the splenic rupture.

CASE V.—A man, aged twenty-one years, was involved in an accident while driving a motor-car. He sustained a fracture of the shaft of the left femur. His lower left ribs had been crushed against the steering-wheel of the car. Left upper abdominal rigidity was observed and the pulse rate was 100 per minute. Operation was performed forthwith and a ruptured spleen was disclosed, about three times the normal size with a zig-zag tear across the posterior surface. After recovery it was learned that the patient had had malaria while in the army, although the last attack had occurred two years previously.

The following two cases resulted from a fall on the abdomen.

CASE VI.—A boy, aged thirteen years, fell out of a loquat tree. His doctor sent him 30 miles to hospital for observation, with apologies. After three hours, laparotomy was performed because of a rising pulse rate and left upper abdominal rigidity. A ruptured spleen was disclosed.

CASE VII.—A boy, aged thirteen years, fell flat on his belly when scrambling over a brick fence four feet high. He walked home, had some pain and vomited in the evening, and then went to sleep. The following evening he was brought to hospital with generalized rigidity, left shoulder pain and a rising pulse rate. Laparotomy disclosed copious free blood from a transverse tear across the posterior surface of the spleen.

Finally, there are examples of splenic rupture from a sharp thrust under the ribs.

CASE VIII.—A man, aged forty-five years, at nine o'clock in the evening, was walking downstairs on crutches because

of a sprained ankle. He tripped and fell forwards, striking himself under the left lower ribs on the banister pole. He went to bed, but awoke four hours later, sweating and with pain below the costal margin. There was no shoulder pain. At 3 a.m. a ruptured spleen was removed.

CASE IX.—A woman, aged twenty-one years, was thrown from a horse, which then kicked her under the ribs on the left side. On her admission to hospital she had a pulse rate of 96 per minute, abdominal rigidity and left shoulder pain. Operation was performed forthwith, and the spleen was found to be lacerated on its convex surface.

CASE X.—A boy, aged fourteen years, fell off his bicycle when the chain broke. The handle bar struck him under the ribs on the left side. He walked home and went to bed, but could not sleep that night. The next evening he was admitted to hospital with a pulse rate of 120 per minute, abdominal tenderness and rigidity and left shoulder pain. Laparotomy disclosed a small tear on the anterior margin of the spleen, bleeding freely.

In another case in which splenectomy was performed for ruptured spleen from crushing injury, the patient was a soldier in the army in 1944, but unfortunately I have no record of how the injury was sustained.

In all these cases, the spleen was removed at operation and the patient made a good recovery.

The diagnosis of ruptured spleen may be very easy when there are history of local injury, early evidence of blood loss, abdominal tenderness and rigidity especially in the left upper quadrant, and left shoulder-tip pain. It may be overlooked because of the trifling nature of the injury in some cases, because initially there is little bleeding or rise of pulse rate, and because the abdominal rigidity is at this stage slight or absent. Left shoulder-tip pain was noted in only three of these cases. On the other hand, the diagnosis may be overlooked when there are other and more obvious injuries present, such as fractured femur, fractured skull, fractured ribs and hæmothorax, and finally when hæmaturia focuses attention on injury to the kidney. When the diagnosis is delayed, abdominal rigidity (perhaps with distension) develops over the next twenty-four hours, with a rising pulse rate. In other cases the diagnosis has not become manifest for many days or even weeks until a secondary hæmorrhage occurs (Hueston, 1951).

The most difficult matter in the early diagnosis is to determine whether the abdominal wall is on guard because of bruising of the abdominal wall or fracture of neighbouring ribs, or whether the guarding is a true abdominal rigidity for which laparotomy is necessary.

CASE XI.—A motor-cyclist, after collision with a motor-car, was pinned under the rear car wheel, which was partly across his left lower ribs. In hospital, X-ray examination revealed fractures of the sixth to tenth ribs. The left lung was apparently unaffected and the urine was clear. There was no shoulder pain. There was pronounced rigidity of the abdominal wall in the left upper quadrant, and despite a pulse rate of only 76 per minute, injury to the spleen seemed probable. At laparotomy there was no such injury, nor was there any intraabdominal lesion. The patient made an uneventful recovery from this unnecessary operation.

Despite this recent experience, I would still maintain that abdominal rigidity alone, if it is definite, warrants laparotomy in cases of crushing injury of the abdomen.

Operation.

When the diagnosis of ruptured spleen is considered certain, a transverse or Kocher's incision is the most suitable. If the nature of the injury is in doubt, a left paramedian incision will be preferred. In any case, the spleen can easily be removed through either of these incisions (or even through a right paramedian incision, or the anterior prolongation of a loin incision for nephrectomy) provided there is an appreciation of how this operation should be carried out—namely, by the sense of touch. There is no need to visualize the spleen or its pedicle *in situ* at all, and it is dangerous to attempt to do so. Pass a hand up over the spleen and feel it carefully, and the blood clot and the torn surface can always be detected if present. Then the lienorenal ligament is broken through with the fingers, and the spleen is lifted forwards and to the right towards its pedicle. By this means, it can

be delivered safely out of the wound—even a right paramedian incision—and it is only then that one should expect the spleen and its pedicle to come to view. The pedicle is then readily clamped and the spleen removed. Speed in operating is an essence of the contract, at least until the splenic pedicle has been secured, and the spleen should be in the dish within five minutes of the opening of the peritoneal cavity. Needless to say, such a manoeuvre has no place in the removal of a diseased spleen, which is a horse of a different colour. One can reasonably assume that a ruptured spleen is healthy, at least in this country, although the possibility of enlargement from malaria acquired during the war still exists; this will result in the occurrence of rupture with deceptively trifling violence on the one hand and may cause added difficulty in removal on the other. This occurred in one case in the present series, but we hope as the years go by that we shall be able to forget about malarial spleens altogether.

However, it is worth mentioning that when the spleen is removed after a delayed diagnosis of rupture (that is, after twenty-four hours or more), it will then be found enlarged perhaps to twice normal size or more by the hæmatoma within, or more particularly (as it seemed to me) from the swelling and reaction consequent on the injury, quite apart from the actual bulk of the hæmatoma. This, of course, occurs when there is a small tear with the main part of the capsule intact, and these are the very cases in which recognition of the injury may easily be delayed for twenty-four hours despite every care in diagnosis. In two cases of the present series (Cases III and X) these conditions obtained. In each of these, the gross enlargement of the spleen from swelling added difficulty to its delivery from the wound, so that the spleen had to be squeezed slightly to get it through an incision which would have been quite adequate for a normal spleen to come through. In any case, it goes without saying that every splenic laceration, however slight, is a sufficient reason to perform a splenectomy when the injury is observed at operation.

In dealing with diseased spleens, meticulous care is necessary to see every part of the organ *in situ* and to deal with each vessel and attachment with a rigid scrutiny of the hæmostasis. For this reason, transdiaphragmatic splenectomy in such cases is gaining in favour. But this approach has no part in the management of a normal spleen which has been ruptured. In this small field of abdominal surgery, I submit that we should emulate the obstetricians, who are accustomed to performing the most extraordinary manoeuvres without seeing the object of their attentions at all, but solely by a highly educated sense of touch and the firm but careful manipulation which goes with it.

CASE XII.—A senior registrar made a right paramedian incision in the abdomen of a muscular man, aged twenty-five years, on a diagnosis of perforated duodenal ulcer. When he opened the peritoneal cavity it was found to be full of blood, and he sought further assistance. The source of bleeding could not be found. The spleen appeared intact, but it was thought necessary to inspect it. The spleen was delivered from the wound by the manoeuvre described and found uninjured. It was returned to its natural habitat. The site of bleeding was eventually discovered in a small tear high up on the inferior surface of the liver. This was plugged with "Oxycel". After he had recovered, the patient brought to mind a crushing injury he had sustained a fortnight previous to the operation. It appeared that he suffered a secondary hæmorrhage from a minor tear of the liver sustained at that time. However, the point about the case in this context is that the spleen was delivered without damage from such a distant incision as a right paramedian.

As has been mentioned, either hæmothorax or hæmaturia may distract attention from a ruptured spleen, or the abdominal injuries may distract attention from those of the thorax.

CASE XIII.—A youth, aged nineteen years, was admitted to hospital at about 5 p.m. after a motor-cycle accident. He was pale and suffering from shock and concussion, and his pulse rate was 84 per minute. He had abdominal tenderness and rigidity in the left loin. When a catheter was passed, deeply bloodstained urine was obtained. A fractured left clavicle was noted. Operation was performed the same

evening for ruptured kidney, the spleen also being kept in mind. With the patient on his right side, the left kidney was exposed through the orthodox loin incision. On delivery it was found to be only bruised, and it was replaced intact. The anterior end of the incision was then prolonged forwards, and the peritoneal cavity was opened in front of the descending colon. Free blood welled forth, and the spleen was brought down, delivered out of the wound and removed. It was badly ruptured, like a squashed tomato. The patient's condition appeared satisfactory after a transfusion of two pints of blood, but he died the next morning after acute respiratory distress.

At autopsy (Dr. Keith Bowden), it was found that no further abdominal bleeding had occurred. There was extensive surgical emphysema of the chest wall and the anterior mediastinum. There were fractures of the second to ninth left ribs in front of the angle, severe bruising of the left lung and a left-sided pressure pneumothorax. The left occipital lobe of the brain was also bruised, but death had occurred from the pressure pneumothorax—a mishap which could well have been remedied had it been recognized in time.

This is the only fatality associated with ruptured spleen in the present series.

CASE XIV.—A woman, aged fifty-two years, was struck by a fast-moving vehicle while crossing the street. She was profoundly shocked on her admission to hospital. An X-ray examination revealed fractures of ten ribs on the left side with hæmothorax. The urine was grossly blood-stained. Examination of the patient four hours later, after resuscitation by blood transfusion, revealed some abdominal rigidity, which was of very doubtful validity owing to her persisting shock and respiratory distress. Nevertheless, operation was decided upon with the concurrence of Dr. Geoffrey Kaye, who agreed to give the anæsthetic, desperate though the chances seemed. With the patient in the dorsal position, a transverse incision was made on the left side about the level of the umbilicus. A severely ruptured spleen and the left kidney (split across its upper pole) were removed as rapidly as possible. The patient made a good recovery.

These two cases suggest that after extreme violence to the left side of the body, as when a pedestrian turns away from a swiftly oncoming vehicle, three injuries are likely to occur together. These are, firstly, thoracic injury—for example, multiple fracture of the ribs on the left side, contusion of the left lung, hæmothorax or pneumothorax; secondly, rupture of the left kidney; and thirdly, rupture of the spleen.

In such cases, if one of this triad of injuries is recognized, the other two should be sought for. In the first of these cases, a fatality occurred because the chest injuries were under-estimated. In the second, the suspicion of ruptured spleen (in addition to the known injuries to the lung and the kidney) provoked the decision to operate, which saved the patient's life.

Rupture of the Kidney.

Rupture of the kidney is much less common than rupture of the spleen. It is usually due to a direct blow in the loin, and the diagnosis is manifest when hæmaturia is demonstrated. Many patients with such injuries can be safely watched and will settle down without operation, but when there is evidence of continuing bleeding, nephrectomy is the safest course.

CASE XV.—A man, aged twenty-eight years, was involved in a motor-car accident. He said that the car rolled over and the edge of an open door jammed him in the left loin. Dullness in the flank and hæmaturia indicated injury to the left kidney. Under observation his pulse rate rose steadily and his blood pressure dropped from 140 to 105 millimetres of mercury, systolic, in four hours. A left nephrectomy was performed, the kidney being torn across the anterior surface into the hilum.

This is the typical example of such cases, but occasionally the kidney may be ruptured from a frontal blow.

CASE XVI.—A slim youth, aged seventeen years, playing Australian Rules football one afternoon, went up for a mark, when he was "kneed" in the belly on the right side by an opposing player while in mid-air. He walked off the field, caught the tram home and went to bed. Passing his urine into a bedroom chamber-pot, he observed that it was deeply blood-stained. In hospital six hours after the injury, his pulse rate was steady at 88 per minute. Morphine was given and he went to sleep. Between 5.30 and 6.30 a.m. the next

day his pulse rate rose to 116 per minute. By the time the operation commenced at 7 a.m., the pulse rate was 140 per minute, though a blood transfusion was running in fast. After large quantities of blood clot had been evacuated, it was found that the lower pole of the kidney had been completely knocked off in its anterior half, and the remaining part of the kidney had fissured tears across it.

The counsel of perfection in cases of ruptured kidney is first to ascertain the presence of a functioning kidney on the other side. But in such cases as these there is no time for finesse, and it is necessary to take the risk of solitary kidney (perhaps one in 1000) rather than the much greater risk of delay. Both these young men are in perfect health five years later (although the first of them was awarded £3000 in court for his disability).

If there is no evidence of continuing bleeding after the first two or three days, the patient usually recovers without mishap. However, secondary hæmorrhage is always a possible danger as the following case indicates.

CASE XVII.—A man, aged thirty-four years, fell off his bicycle and injured himself in the left loin. An hour later he passed blood in his urine. He was observed in the hospital casualty department and allowed to go home the following day, as the urine was then clear. Ten days later he was readmitted to hospital, hæmaturia having recurred in the interim. An excretion pyelogram revealed a non-functioning left kidney. Three weeks after the accident left nephrectomy was performed. The kidney was surrounded and compressed by a mass of old and recent blood clot confined to the fascia of Gerota. There was a deep tear across the anterior surface of the kidney filled with organized blood clot, and a wedge-shaped infarct was present.

Rupture of the Liver.

Because through-and-through bullet wounds of the liver are best left alone, there is a misguided idea that operation is either never necessary or never of any avail in cases of ruptured liver.

CASE XVIII.—A boy, aged eleven years, was injured when a petrol drum exploded; the lid was blown off and hit him flat on his belly. In hospital he appeared shocked, with a rising pulse rate and abdominal rigidity. The urine was faintly blood-stained, but the likelihood of intraperitoneal injury made laparotomy imperative. Free blood in the right paracolic gutter was found to be coming from a tear on the inferior surface of the liver, three inches long by half an inch deep, running parallel to and one inch to the right of the gall-bladder fossa. The bleeding was arrested by four catgut sutures passed through on an atraumatic needle. He made a good recovery.

CASE XIX.—A sailor, aged twenty-two years, was thrown out of a motor-cycle side-car, which rolled over on top of him. In hospital he was found to be shocked and bruised. Twenty-four hours later abdominal rigidity was pronounced, and at operation a tear was found on the inferior surface of the liver, very similar to that in the last case, and bleeding freely. It was repaired by suture.

These two patients conceivably may have recovered without operation, but few surgeons are prepared to close the abdomen leaving the gall-bladder fossa bleeding freely, and it would seem just as neglectful to treat a comparable hæmorrhage from a laceration of the liver by conservative measures. On the other hand, though massive hæmorrhage from the liver is frequently beyond human aid, some of these lesions are amenable to surgical repair and I am informed by Dr. Keith Bowden, the Government pathologist, that occasionally such subjects are seen at the morgue when operation might have saved them.

CASE XX.—A drunken sailor was backed into by a big American car at the end of a lane. The next day in hospital he was gravely ill with a rapid pulse and abdominal rigidity, especially on the right side. Through a right paramedian incision a deep extensive tear could be identified high up on the superior surface of the liver with copious free blood under the diaphragm and in the peritoneal cavity. The incision was extended obliquely upwards between the ribs, the thorax being opened, and the diaphragm was split right back to expose a tear large enough to put a fist into, and bleeding freely. Widely placed catgut sutures approximated this tear over plugs of "Oxycel", controlling the bleeding. The patient made a good recovery and later returned to his ship.

Transdiaphragmatic exposure of the liver gave the only chance of dealing with this case, and it was fortunate that the anæsthetic was being given by controlled respiration. It would seem a wise measure to employ such an anæsthetic in any case of suspected rupture of the liver.

Sometimes laparotomy will be performed unnecessarily, and this must be accepted rather than that serious injury should be overlooked.

CASE XXI.—A powerfully built man, aged twenty-five years, was crushed by a tractor which fell over on him. Five hours later in hospital rigidity and tenderness of the right hypochondrium were present. Bruising of the back was observed. While the patient was under observation the abdominal rigidity became generalized, and though the pulse rate was only 84 per minute and there was no shoulder pain, he was regarded as having sustained an intraperitoneal rupture. Eight hours after the accident, operation was performed, but apart from bruising of the mesentery of the small bowel, the abdominal contents (including the liver) were intact. Fractured ribs and bruising of the abdominal wall had produced a deceptive appearance of peritonitis.

Yet again the history of injury may be entirely misleading.

CASE XXII.—A woman, aged twenty-six years, driving her own motor-car on a country road, skidded in gravel and ran into an embankment. She was momentarily crushed against the steering wheel. However, she was able to walk after the accident, and when help came she was taken home. The next day she felt ill and stayed in bed, taking no food. The following morning, after a cup of tea, she vomited and the doctor was called. He found abdominal rigidity and a pulse rate of 104 per minute, and sent her to hospital. On examination, about forty-eight hours after the accident, the patient complained of pain across the upper part of the abdomen. Generalized abdominal rigidity and tenderness were present, with pronounced tenderness on rectal examination. The temperature was normal and the pulse rate 112 per minute. The hæmoglobin value was 85%. It was thought that some bleeding was occurring from a minor tear of the liver or spleen. At operation no blood was found, but there was a turbid exudate from general peritonitis. The source of this was found in bilateral salpingitis with pus leaking from a small left-sided pyosalpinx. This was removed, and the patient made a good recovery.

Rupture of the Bowel.

Rupture of the bowel can occur from non-penetrating injury in at least two ways: firstly from run-over accidents (especially to children, it would seem), and secondly from a sharp thrust (as from a motor-bicycle handle).

CASE XXIII.—A child, aged six years, was run over by a motor-lorry, the wide tyre passing right over his abdomen with resultant fractures of the pubic rami and of the sacrum. Seven hours later laparotomy was performed because of abdominal rigidity. There was a transverse tear three-quarters of the way across the small bowel, 18 inches from the duodenum. This was repaired and a side-to-side anastomosis performed. Recovery was uneventful, and twelve years later the patient is in perfect health.

CASE XXIV.—A child, aged six years, was run over by an ice-cart. There were fractures of the pubic rami, but the urine was clear. Five hours later the pulse rate was rising and the abdomen rigid, with tenderness on pressure even in the epigastrium. At operation free blood in the peritoneal cavity was found to be coming from a tear in the mesentery of the small bowel 12 inches from the caecum, the bowel being separated from its mesentery over a distance of two inches. There was also a split in the mesentery of the terminal portion of the ileum adjacent to the appendix. These tears were repaired, the bowel being viable, and the appendix was removed. Recovery was uneventful.

Presumably in both these cases the bowel or its mesentery was crushed against the vertebral column. It seems likely that rupture of the bowel from "impalement" injuries is caused similarly—that is, the sharp thrust on the unguarded abdominal wall crushes the affected part against the vertebral column or the ilium, although the precise mechanism must remain somewhat speculative. The following three cases are examples of such an injury.

CASE XXV.—At half-past six one evening a man, aged forty-three years, was chasing his grown-up son upstairs in a drunken quarrel when he got a back-kick in the lower part of the abdomen from the other's heel. He immediately

felt a severe pain and had to lie down. Later he vomited, and he said the vomitus contained some bright red blood. When examined in hospital at 4 a.m. the next day, he was found to have generalized abdominal rigidity with a pulse rate of 108 per minute. His tongue was very brown and dry. He said he had passed only a cupful of urine since the injury, which seemed not enough to be consistent with his statement that he had had well over a dozen glasses of beer prior to the accident. A catheter was passed, and only about an ounce of urine was obtained; it appeared clear to the naked eye. Despite the absence of obvious blood-staining of the urine, it was thought probable that a rupture of the bladder had occurred. At operation the bladder was found intact, though there was much free fluid in the peritoneal cavity, distinctly blood-stained. The incision was enlarged and the stomach and duodenum were explored for perforation without result. Therefore the small bowel was traced down from the duodenum, and about half-way down its length a tear about three-quarters of an inch long was found on the antimesenteric border. This was repaired, and he made a good recovery. The oliguria may have been due to shock or partly the result of the very large quantity of peritoneal exudate.

The mechanism of injury in this case seems very puzzling, but by analogy with the two cases which follow I would consider that it was due to crushing of the bowel against the posterior abdominal wall.

CASE XXVI.—A motor cyclist, aged twenty-two years, was thrown from his machine in an accident, sustaining fractures of the left femur and tibia and a crush injury of the left foot. Although severely shocked, he still complained of abdominal pain, and there was some slight rigidity of the left lower quadrant of the abdomen. The urine was clear. It was thought that the motor-cycle handle had impinged on the anterior abdominal wall in the tender area. The signs of abdominal rigidity and tenderness persisted under observation, and five hours after the accident laparotomy was performed; this revealed a tear in the jejunum about a foot from the duodenum. This was readily repaired, and the fractures were splinted. The patient died about thirty hours later from persisting shock.

This was in 1940. No blood transfusion was given at any stage, although "intravenous saline solution was administered". It is with mixed feelings that one realizes that no better resuscitation was in vogue in a big modern hospital even as late as twelve years ago. Present-day methods would surely have saved this patient's life.

CASE XXVII.—This case, which occurred in 1948, had a happier outcome. The patient was another young motor-cyclist involved in an accident. The sole injury was to the anterior abdominal wall; his motor-bicycle handle impaled him in the left lower quadrant. Though the skin was intact, the muscles beneath were split and there was a tear in the ileum, which was also ripped off its mesentery over a distance of six inches. Resection and end-to-end anastomosis were performed, and a tear in the mesentery of the sigmoid colon was also repaired. Recovery was uneventful.

I have referred to these two cases in previous reports (Lawson, 1940, 1948), and I am informed by Dr. R. Officer that he has encountered one similar to these, in which the mode of injury was the same—namely, impalement on the handle of a motor-cycle. It should be mentioned that in Case XXVII the left psoas muscle was partly torn on its medial margin, where there was a gap adjacent to the left common iliac artery. This I regard as a clear indication that the injury to the bowel was due to impalement by the motor-cycle handle on the posterior abdominal wall.

Finally, the following bizarre case is recorded to emphasize once more the need for laparotomy whenever abdominal visceral injury is suspected.

CASE XXVIII.—A youth, aged twenty years, a National Service trainee, was thrown from a motor-lorry and struck in the abdomen by the end of a heavy piece of timber which had been loaded on the lorry. He had the bruised square imprint of the blow from the timber on the skin over his right upper rectus muscle. When he was examined two days later, his pulse rate was rising, he was vomiting, and there was abdominal rigidity, worst over the right upper quadrant. Laparotomy was performed on a diagnosis of ruptured liver. However, the liver was found intact, and the injury proved to be a very large retroperitoneal hematoma overlying the duodenum and the head of the pancreas, bulging forward in the transverse mesocolon, and spreading downwards distal to the bifurcation of the aorta. A kidney dish full of blood

clot was evacuated, and a large tributary of the portal vein torn across as it passed out of the pancreas was revealed. This was secured. The muscular coat of the second part of the duodenum was then found partly torn off the underlying mucosa, which was pouting through a rent two inches long, though without perforation of its lumen. The duodenum was repaired and a gastro-enterostomy performed, for the infiltration of hematoma around the duodenum seemed likely to produce an ileus. A drain tube was brought out posteriorly. After an anxious fortnight the patient made a good recovery.

It seems worth recording these cases in a little detail, for there is no doubt that patterns of injury emerge from a study of motor-accident victims, and that these may be most valuable as a future guide. Among fracture surgeons the "bumper-bar fractures" and the "baby-car fractures", for example, are widely recognized and separately treated in modern textbooks. It would appear that many of the abdominal injuries can similarly be classified into patterns which can be expected to follow accidents of a particular character. I submit the triad of injuries to the spleen, left kidney and left lung as one of these, and the impalement and run-over injuries to the bowel as others, the recollection of which may be of signal assistance in the early diagnosis of these abdominal visceral injuries.

Rupture of the Bladder and of the Membranous Urethra.

It may seem to be stretching the limits of anatomy to include the membranous urethra with the "abdominal viscera". However, rupture of the membranous urethra accompanying fracture of the pelvis is clinically so closely allied to the extraperitoneal rupture of the bladder which occurs from the same type of violence, that it is impossible to separate them in any discussion.

On the other hand, rupture of the bulbous urethra from direct perineal injury, such as falling astride a fence *et cetera*, is a quite different clinical entity with a separate causation. It is indeed extraabdominal, and it is therefore not mentioned in the present context.

In the first place, a full bladder may be ruptured by a kick on the lower part of the abdomen, usually in a brawl when both parties are drunk. Diagnosis may be difficult because of this, and also because of the remarkably slight peritoneal reaction which occurs from extravasation of urine into the peritoneal cavity in these circumstances.

CASE XXIX.—A man, aged twenty-five years, was picked up about 7.30 one evening by an ambulance team, when he was found lying on the ground complaining of abdominal pain. It seemed he had been drinking and had been involved in a brawl. Under observation he was very drunk, but complained of suprapubic pain and tenderness. There was no abdominal rigidity. He passed small amounts of blood-stained urine, and on catheterization a further four ounces of blood-stained urine were withdrawn. Injury to the kidney was suspected. The next morning abdominal rigidity was pronounced, and laparotomy disclosed a sagittal laceration of the vault of the bladder about three inches long. There were several pints of slightly blood-stained urine in the peritoneal cavity. After recovery he recalled that he had been punched very low (over the full bladder) in the brawl.

Most often, however, rupture of the bladder or urethra is a complication of a fracture of the pelvis occurring in a crushing injury. It is extraordinary how often these visceral injuries are overlooked in such cases.

CASE XXX.—A motor-cyclist was admitted to hospital one Sunday morning after an accident, with a diagnosis of fracture of the tibia and fibula. Only ten hours later it was discovered that he also had a fractured pelvis, and that he had passed no urine since the accident. Passage of a catheter produced no urine, and injection of four ounces of sterile water (which failed to return) confirmed the diagnosis of ruptured bladder. Two years later the patient was still being treated for complication of this injury.

CASE XXXI.—An old man was sent from the casualty department to the operating theatre for repair of "laceration of the buttocks" following a motor accident. The lacerations were actually of the ischio-rectal fossa and did not appear serious, though he was gravely shocked. A catheter was passed along the urethra and came out of the wound in the ischio-rectal fossa. Rupture of the urethra had occurred from fractured pelvis. The patient died the next day.

CASE XXXII.—A man, aged fifty-nine years, was knocked off his bicycle by a motor-car in collision. In hospital, about midnight, he appeared shocked, with fractured pelvis and bruising in the left groin. The possibility of urethral rupture was considered unlikely. There was no bruising of the perineum. Twelve hours later a catheter was passed and no urine was obtained. Four ounces of water were run in and none came back. At operation an extraperitoneal rupture of the bladder was disclosed. The patient died about a week later.

The first rule in diagnosis is, of course, to keep in mind this possibility. For example, it may be taken almost as an axiom that when 20 or 30 people are injured in a motor-omnibus accident, two or three of them will sustain a fracture of the pelvis, and each of these victims should be suspected of having a rupture of the bladder or urethra. Female patients seem immune from rupture of the urethra, but can still sustain extraperitoneal rupture of the bladder in these circumstances. These patients are likely to be severely shocked, with pain over the lower part of the abdomen, or in some cases with pain and rigidity initially over the whole abdomen from the associated pelvic fractures and bruising of the abdominal wall. However, even the pelvic fracture has been missed on occasion. Tenderness over any part of the bony pelvis should be sought for, especially over the *symphysis pubis* and laterally from it on either side in the groins, and secondly along the inferior ischio-pubic ramus.

A diagnosis of fracture of the pelvis having been established either clinically or by X-ray examination, injury to the bladder or urethra should be suspected immediately, especially if the X-ray picture reveals a fracture of the pubic segment—either a separation or distraction of the symphysis, or an in-driven fragment of the body or ramus of the pubis.

A study of X-ray films in cases of rupture of the bladder and urethra seems to indicate that there are two classes of fracture of the pelvis associated with these injuries—namely, an in-driven central fragment comprising the symphysis and a part or the whole of the pubic ramus on both sides on the one hand and a separation of the pubic symphysis with distraction on the other. It also seems possible that it is the former type of fracture which is usually responsible for bladder injury, while the distraction injuries of the symphysis are more often associated with rupture of the urethra. But the evidence available is so limited because of the small number of these cases that no firm statement can be made about this, and it is put forward merely as a suggestion which may be worth further testing in future cases.

Clinically one looks particularly for a hæmatoma of the perineum spreading along the bulb. This may be present even though no direct injury to the perineum occurred, and is all the more significant thereby. Secondly, a rectal examination should always be made (with the patient in a dorsal position). Local tenderness at the apex of the prostate may be found in cases of ruptured urethra. Thirdly, swelling and extravasation above the groins due to bladder injury may be observed, contrasting with the outline of the full bladder, which it may be possible to discern in other cases of rupture of the urethra. One should, of course, inquire as to the state of the patient's bladder at the time of injury, and whether he has attempted to pass urine since, and warn him not to do so. If, in fact, he has already passed a quantity of clear urine without difficulty or distress, one must assume that bladder and urethra are intact. Blood on the end of the penis (that is, at the meatus) is of special importance in diagnosis, and is highly suggestive of injury to the urethra.

In any case a catheter should now be passed—that is, whenever there is a fracture of the pelvis in a male patient and the possibility of damage to the bladder or urethra exists. If clear urine is obtained, the catheter passing easily, it is apparent that all is well. If only a few drops of blood are obtained, diagnosis of ruptured urethra is made. A small amount only of blood-stained urine, or none at all—the catheter passing easily—is likely to indicate rupture of the bladder. In this case, if any doubt remains, one should inject four ounces of sterile water—less if it is

causing pain. If this water fails to come back, the diagnosis of ruptured bladder is clinched. An increase of the suprapubic extravasation may be observed at the same time.

The wisdom of this last method, of diagnosis by injection, has been questioned.

CASE XXXIII.—A man, aged sixty-one years, involved in a motor-car accident, sustained a fracture of the pelvis. There were gross displacement of the left half of the pelvis at the sacro-iliac region and fractures of the pubic ramus also. He was severely shocked and was not questioned at length. A catheter was passed and no urine was obtained. A diagnosis of rupture of the bladder appeared probable, but injection of about an ounce of water per catheter was made—none came back and the diagnosis was considered certain. At operation the bladder was found nearly empty, but quite intact. The patient ultimately survived this unnecessary operation after a very long illness. Apparently he had emptied his bladder just before the accident, while the small amount injected was insufficient to drain back.

Therefore I would consider that in any case of doubt at least four ounces should be injected, or more if doubt persists. By no other means could the mistaken diagnosis have been dismissed in this case.

Treatment.

Immediate operation is indicated, or at least operation as soon as the patient is sufficiently resuscitated. Suprapubic exposure will reveal extravasation of blood and urine from a ruptured bladder. The rent in the bladder (which is usually extraperitoneal) is identified and repaired by suture, and a suprapubic drain tube into the bladder is left in place. The following two cases are typical examples of rupture of the bladder accompanying fracture of the pelvis.

CASE XXXIV.—A man, aged twenty-five years, was pinned beneath a motor vehicle and sustained fractures of the pelvis. He complained of a desire to pass urine, but was unable to do so. Three ounces of blood-stained urine were obtained per catheter. A diagnosis of rupture of the bladder was made, and at operation an extraperitoneal tear on the anterior surface about two inches long was found and repaired. He made a good recovery, though a vesical calculus developed a few months later, requiring suprapubic operation for its removal.

Sad to say, this patient died not much later, from cancer of the stomach, but that has nothing to do with the present story.

CASE XXXV.—A man, aged thirty-three years, sustained a fracture of the pelvis in a motor-car accident, X-ray examination revealing bilateral fractures of the pubis. He had a constant desire to pass urine, and when a catheter was passed about five ounces of blood-stained urine were obtained. A diagnosis of extraperitoneal rupture of the bladder was made. At operation the tear in the bladder was not extraperitoneal as is usual in these cases, but in the vault, about three-quarters of an inch long, opening into the peritoneal cavity, which was thereby contaminated. This was repaired, and after suprapubic drainage the patient made a good recovery. When examined two years later he was in perfect health.

When the membranous urethra is ruptured, extraperitoneal extravasated blood may be seen at operation around the base of the bladder, which, however, is intact and possibly distended. It should be opened suprapubically and emptied, and the site of the urethral rupture is sought by opening of the prevesical space. With distraction of the symphysis this space is already opened up by the trauma, and the gap below the apex of the prostate, indicating the site of severance of the urethra, is identified by a finger passed across it. Restoration of the urethral continuity by the method of "railroading" should then be attempted—by the connecting of the ends of two sounds passed up the urethra and down the internal meatus through the bladder with a short length of rubber tubing. The sound passing up from the penis is then "railroaded" into the bladder. (Certain American surgeons have devised interlocking sounds for use in these cases, thus dispensing with the connecting length of rubber tubing.) A soft rubber catheter (of about 12 to 14 gauge) is then pushed onto the tip of the urethral sound, which presents in the bladder. The sound is then withdrawn, the catheter being left with its tip in the bladder and the urethral continuity restored; the

catheter acts both as a splint for the urethra and as a drain for the bladder. Suprapubic drainage is also instituted. The urethral catheter should be left in place for about fourteen days, when (the suprapubic wound having healed) normal micturition will commence.

The following is an example of a case in which this type of treatment was used.

CASE XXXVI.—A soldier, crushed by a fall of earth, was so shocked on his arrival at the hospital about an hour later that no diagnosis could be made. The whole abdomen appeared rigid, and rupture of the spleen was considered possible. Six hours later this general abdominal rigidity had disappeared, while suprapubic tenderness and swelling were observed. There was pronounced tenderness at the apex of the prostate on rectal examination, and when a catheter was passed only a few drops of blood were obtained. A diagnosis of ruptured urethra was made. Repair by "railroading" as described was successful, and the patient made a good recovery. When last heard of nine months later he was very well, with normal micturition.

In other cases in which the prevesical space is not disrupted by the pelvic fractures, this railroading procedure may be extremely difficult, or so it seemed to me.

CASE XXXVII.—A soldier with fracture of the pelvis following a motor-truck accident was observed for several hours before a diagnosis of rupture of the urethra was finally made. At operation "railroading" of the urethra could not be performed—that is, the ends of the two sounds could not be made to connect as is necessary. Attempts were ultimately abandoned because of his condition of shock, and he was left with a suprapubic cystostomy, but he died the next day.

Since this experience, I believe that perineal section with the patient in the lithotomy position should find a place as an alternative method of treatment, even when the rupture is known to be in the membranous urethra.

CASE XXXVIII.—A soldier in a motor-car accident sustained a laceration of the knee, which was repaired under general anaesthesia. He was then transferred to a general hospital, where the next day he was discovered to have blood on the end of his penis. He was unable to pass urine and had not done so since the accident. Further examination revealed clinical evidence of fracture of the pelvis. A catheter could not be passed, and a few drops of blood appeared when the attempt was made. There was an appearance of "bruising" of the perineum posteriorly. A diagnosis of rupture of the urethra was then made, twenty-four hours after the accident. Suprapubic cystostomy revealed a full bladder with clear urine. "Railroading" was considered inadvisable, as the urethral rupture appeared inaccessible. A perineal exposure was therefore performed with the patient in the lithotomy position, and the rupture of the membranous urethra was thus exposed high up, and repaired by suturing the "roof" of the urethra only, after the manner of a Hamilton Russell operation for stricture. A catheter was then tied in, the perineal wound being left open with gauze packing. He made a good recovery, and the eventual result when he was last heard of (ten months after the accident) was very good.

Once again, the delay in diagnosis which so often occurs in these cases is worth noting.

Lastly, because the passage of the catheter has been sometimes considered unnecessary in establishing a diagnosis, the following case is quoted.

CASE XXXIX.—A soldier sustained a fracture of the pelvis from crushing injury in a motor-car accident. There was blood on the end of his penis, and a rupture of the urethra was suspected. However, when a catheter was passed, clear urine was obtained. Under observation a hæmatoma of the perineum appeared, spreading forwards to envelop the scrotum, penis and suprapubic area until it finally outlined with a fascinating anatomical precision the limits of Colles's fascia, the posterior margin forming a sharp line at the base of the uro-genital triangle. This patient evidently had a minor tear of the urethra with hæmorrhage into the superficial perineal pouch. He recovered without operation or complications of any sort.

The diagnosis and surgical management of rupture of the bladder and membranous urethra are generally more difficult than in the case of the other abdominal visceral injuries described. Though these cases are relatively uncommon, it is imperative that they should be recognized early, and the importance of correct surgical treatment

needs no emphasis. Those patients who have been mismanaged in their early stages stand condemned to a life of misery from stricture, from persisting fistula or from recurring urinary infection and calculus. All the ingenuity expended in subsequent restorative surgical procedures will scarcely atone for mistakes and omissions in the first twenty-four hours after the accident.

Summary.

Traumatic rupture of abdominal viscera from non-penetrating violence is discussed from the point of view of causation, clinical features and surgical management. The cases quoted comprise the following: eleven of rupture of the spleen alone; two of rupture of the spleen and left kidney; three other cases of rupture of the kidney alone; three cases of ruptured liver; four cases of rupture of the bowel; four cases of rupture of the bladder and four of rupture of the membranous urethra; together with other cases illustrating problems and mistakes in diagnosis.

Two patients (Case XVII and Case XXIX) were treated respectively by Dr. Leonard Ball and Dr. Marshal Renou, who have kindly permitted me to quote those cases; the patient in Case XXX was observed by me as a house-surgeon. The remaining patients were under my own care. The increasing frequency of injuries of this type is indicated, and attention is drawn to certain "patterns" of injury which have been encountered, and which appear to be associated with particular kinds of violence in traffic accidents. It is suggested that recognition of one of these patterns may be a cardinal point in establishing the diagnosis, thus enabling an early decision to be reached about the need for an operation which may be life-saving.

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MEDICINE AND HUMANITY.

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TODAY as never before there are influences at work which make man an integral part of the things about him. More rapid transport and wider communications oblige him to seek a broader outlook. He talks across vast spaces, at a simple turn of a dial he tunes in to the life of every land, and soon by television he will see into the most remote corner of the earth. So there dawns on him a new thought, a new way of life. Previously with his existence bounded by limited experiences, his life moved along unruffled within the confines of his own allotment. Now, whether he desires it or not, factors of increasing complexity make him answerable to countless environmental issues that may equally influence his well-being. No longer must he choose between black and white, but between a myriad of intermediate hues. This demands refined judgement and time for decision, yet by the very nature of his progress he is deprived of opportunity for contemplation. He therefore develops a tentative uncertain attitude, preferring no decision to an erroneous one. Such immobility in an elastic ever-changing environment produces tremendous nervous strain and results in functional disturbances identical with those produced by morbid pathological change. Medicine therefore, concerned as it is with the individual's total well-being, must no longer limit its attention to the anatomical components of a

person, but must survey all the physical, mental and social factors that make up life's programme.

This attitude is reflected in the recent statement by the World Health Organization, wherein health is defined not merely as the absence of disease but as a state of harmonious balance between physical, mental and social factors—"a state of complete physical, mental and social well-being". Disturbance of this balance from elements entirely outside of the individual constitutes as real a cause of disease as does pathological change.

In our search for a more complete understanding of the problem much can be learned by an examination of man's attempt to control health over the centuries. How close Hippocrates was to the truth! The very word "physician", from *φύσις* meaning Nature, was used by him because he claimed that every physician "was to be skilled in Nature and must strive to know what man is in relation to food, drink, occupation, and what effect each of these had on the other". Possessing, however, no fundamental physiological knowledge and working therefore only on empirical grounds, the early physician was too prone to find the cause of ill-health in imaginary demoniacal forces. Disease represented an attack by some uncomprehended power emerging from a deep cymmerian darkness, and treatment always included the invocation of a higher spirit to overcome the invader. The amulet, charm or ikon protected one from such evil and the absurd use of a word like "abracadabra" could keep illness at bay. Thus ran the magic jingle of those days:

Tie this about the neck with flexion string,
Mighty the good it will to the patient bring.
Its wondrous potency shall guard his head
And drive disease and death from off his bed.

Theriac with its sixty-three or more ingredients including flesh of vipers and blood of Pontine ducks so protected one from harm that death was only possible by Gallic spear—"at any rate, so the story runs", said Plutarch.

The more rational approach began with Harvey (1578-1657), who with faultless logic was first to apply the objective experimental technique to observations on the circulation. But progress was sadly impeded by prejudice—Vesalius found it necessary to climb gallows or rob graves; and later anatomists accepted material from the notorious Burke and Hare, who committed murder to obtain it. Notwithstanding all this, man's horizon was widening—Newton studied the firmament, Galileo the stars, and gradually "aye for a man's reach should be beyond his grasp" beginnings of a newer concept became apparent.

With the microscope man studied the simplest forms of life; he found the single protoplasmic cell was in a state of constant adaptation; when prodded it moved, if in a poor environment it sought a better one. Soon it was observed that every organ was made up of a collection of such cells and an over-all common pattern was suspected. Just as the isolated cell would adapt itself to change, why should not a group of such cells comprising an organ do likewise? Indeed so strong are the basic forces of the primordial cell within man that in spite of the apparent ability to plan and organize his life, he (and the cells that constitute him) remains completely dependent on and inseparable from the materials about him. Deprive him of water and he shall die, give him a profusion of everything but deprive him only of minute traces of such minerals as iodine, cobalt or manganese and he shall perish in the face of plenty. It has been shown that a change of hydrogen ion concentration of the extracellular fluid from 0.000000032 to 0.000000034 will result in immediate respiratory distress. Is it to be wondered at that a mechanism of such exquisite delicacy may occasionally waver, that to manage such a fine instrument requires gentleness of touch and profound understanding? Yet "*Homo sapiens*", as man styles himself, has not learned this simple lesson. Health is regarded casually as an automatic right—ill-health an intrusion on this privilege. A reason for this may be that the human mechanism works on a tremendous reserve potential and in any such device the running efficiency will give no clue to the exact state of reserves—the car with its ounce of petrol will run as efficiently as that with full tank. A serious deterioration of organ reserve may therefore occur without any effect on running capacity or function. Taking advantage of this, man may be led to believe that he can allow his ambition and desire for power full rein. Living thus in a false sense of security, he suddenly finds he has no reserves to call upon and the inevitable breaking point reveals itself in an apparent abrupt failure of one part, such as stomach, bowel or heart. He is prone then

to ascribe his ill-health to disease of this part rather than to his way of life.

Health then can result only from a constant adaptation to an ever-changing environment. It is as if at birth we are provided with a set of parts ready to function effectively if given the necessary materials. From the very first breath, function at once depends on the substances available, the mother's breast, protective clothing, warmth. Should these factors be favourable, the balance is maintained and health is said to be normal. Should the reverse be the case, the equilibrium is upset and ill-health results. The mechanism may be likened to a balance poised at its fulcrum subject to disturbance on either side of the scale. A special feature of this particular mechanism, however, is a gyroscope-like correcting device which automatically comes into play should any upset occur. This is called "reaction". Organisms, viruses, social catastrophes, emotional disturbance, war, by disturbing this balance, are each capable of establishing the "reaction" called disease. Ill-health in this respect is a variant of the relentless natural interweaving of life, time and energy, and health is only one phase of this state. During life one "reaction" may resemble another, and it is for the physician when confronted with the problem to appraise the "reaction" carefully and to find at what point he may provide support. He cannot by some magical device create the balanced state, he can only give the available tissues the maximum chance to restore it. Alas, too often the patient approaches the physician expecting to borrow or buy health from him as would the purchaser buy a commodity over the counter. And only too often, by the use of limited diagnostic labels such as "heart disease", "peptic ulcer", the physician throws the emphasis on the part instead of the whole, thereby leading to the belief that some easily procurable remedy will patch up the part and provide the cure.

If he is to avoid this error, the physician must unravel man's personal life history in the light of experience, love, hate, suffering and ambition. No less important, he must evaluate man's place in the order of things. To do this he must retrace all the influences leading to present medical thought so to be better equipped to "wander into regions yet untrod and read what is still unread in the manuscript of God".

Although Claude Bernard in his biochemical researches laid the true foundation for modern medicine, the immediate implication of his discoveries went unheeded. Already Schleiden and Schwann had recognized the cell as the unit of living structure and the only available evidence of abnormality was visible alteration in the cell. It was therefore argued that structural change was a necessary accompaniment of disease, and functional biochemical disturbance without cell alteration was not considered or deemed possible. Bacteriological discovery resulted in further over-simplification of the cause of illness. Semmelweis amidst ignorance and prejudice may have announced in vain that even "a gentleman with frock coat and clean hands" could carry disease, but when the irrefutable evidence of Koch and Pasteur firmly established the germ theory, whether a germ was discovered or not all morbid pathological states were ascribed to microbial infection. Strongly supported by the Virchow school, this viewpoint was the accepted one until recent years. Yet even in those diseases in which a causative organism was firmly established cure was not always forthcoming. Man looked about him for the answer to this paradox. Was there some hidden factor? Should disease always be seen in the light of attack from outside the body? There were many examples in which elements other than the germ could profoundly alter the nature and course of illness. Crowding, poverty and nutrition could significantly affect the incidence and severity of infection; a germ producing devastating destruction in one race would leave another unharmed. Furthermore, if one turned to the experiences of the past it was revealed that the burning out of half of London stopped the plague as no exhortation could; that Napoleon in his Russian campaign lost more men from typhus and dysentery than from open battle.

If fire or the mere congregating of men in large numbers could influence disease, was it after all enough to blame the invader alone? For instance, may not the tissues themselves show varying reactions to a common attacker? So gradually attention became focused upon the soil on which the germ lodged. Of what was the soil made, and how did it function? Man retraced his steps to find that every cell with its nucleus and protoplasm possessed identical basic materials—proteins, starches, fats, minerals and water. Very strikingly it was realized that such materials were the self-same substances

forming man's environment. Consumed in a crude state in the form of food, after undergoing chemical changes within the body they are then utilized by the cell. For example, proteins which were once thought to be simple replacers of worn out tissue are now recognized as complex molecules, each being virtually fragmented by the liver and then resynthesized prior to delivery to the cell. Thus, constantly adapting to supply and demand and dependent on both, an ever-changing kinetic pattern is presented. It is no longer possible to think of the protein content of the cell but of cell metabolism; no longer of mineral content, but of ionic balance across the cell membrane; there is never a still moment. Some of the liver's chemical actions are miracles of synthesis not possible in the laboratory at thousands of degrees of heat.

A catalyst system of amazing complexity is therefore necessary. Vitamins, hormones and a host of trace substances perform this important function. Indeed trace elements prove of such vital need that the importance of a substance is not to be measured by the yardstick of quantity, but by quality.

Cell composition then is entirely dependent on the supply of proteins, carbohydrates, minerals and the like, and it is to the source of these materials that we must direct our attention. Just as an automatic electrical device can be deranged by breakdown of electrical power as effectively as by weakness of a component part, so may an organ be impaired by failure of civil communications, industrial upheavals, coal strikes, shipping, food production, economic and labour problems. All could equally contribute to cell disturbance without direct assault on the cell. Acceptance of this fact is the first step to an understanding of newer advances in medical thought.

In the supply of materials much is prehandled by plants and other living matter. Obtaining radioactive energy from the sun, activated chlorophyll is able to produce from the simple elements nitrogen, hydrogen and carbon all the complex needs of life. From the algae of the sea through fish to herbivorous animals, further steps of synthesis are elaborated in the much needed food cycle. Man enters this as part of a vast universal programme, supplying even in death some of the materials necessary to maintain the cycle.

Thus the emphasis changes. Disease is no longer synonymous with infection, but rather with disturbance of biological balance, the incredibly fine stability being maintained by the nervous system, just as the conductor controls the balance and performance of an orchestra. Because all forms of life exercise this power of adaptation and control, man must surely learn with humility that his right to live on this planet must be constantly disputed with the humble organism or ultra-microscopic virus. This constitutes an eternal environmental challenge. As man learns a new form of attack the organism musters a new defence, protection being finally achieved only after many bitter struggles and frequent casualties. In those diseases in which man has learned an effective defence—for example, measles—the struggle is stereotyped and the disease reaction easily recognized. Where no defence has been learned the disease in various forms takes terrible toll; here the victory may go to the attackers, there to the defenders, and occasionally the battle hovers. Whatever the outcome, the struggle will continue into the infinity of time, and the cost of health will be eternal vigilance.

In this conflict man may pay a heavy penalty for using any device which may propel Nature with undue haste. As an example, it would seem desirable to sow the hardy plant, yet the resultant uniformity of strain by its very lack of variety would make attack more devastating should it occur. Again, timber felled indiscriminately for urgently needed homes could lead to gross soil erosion at a time when more than a twofold increase of food production was needed for the adequate feeding of humanity. Soil, like the living cell, follows the same cycles of environmental and physiological balance and requires the same nurturing; it is in a constant state of change, its nitrogen and mineral content will alter with use or abuse, and it must be protected from exhaustion, sickness and death. Even the health-giving qualities of the same foods will vary if these foods are grown under different soil conditions, and Sir A. Howard claimed that "half the ailments of mankind would disappear if food were raised from fertile soil and consumed in fresh condition". Foods of similar caloric value may therefore differ in nutritional worth, a point which should reveal the absurdity of perpetuating a pose of pseudo-scientific clinical accuracy by measuring diets to the fraction of a calorie. Better surely that man should learn to respect and conserve the bounties of Nature than that by forcing production for quick economic

gain he should produce foods of lesser nutritional value, so destroying the very highway to health which he so ardently seeks.

Recent discoveries should make us ponder deeply on all these matters. With the recognition of cortisone and adreno-pituitary mechanisms, it would seem that a naturally occurring product is capable of controlling or adjusting the "reaction" to environmental change. In the presence of these substances the inflammatory reaction is prevented or significantly modified, the allergic fire changed to a temperate warmth. We learn that these materials are produced by stress of various kinds and that they come into action in gyroscope-like fashion to offset unbalanced states. Such a device, tediously and laboriously developed by Nature over aeons of time in the hard school of experience, is now by the help of the chemist available for the mere asking. By bringing natural reactions under arbitrary control, this powerful weapon may enable us to play Nature at its own game and modify disease at will. But may we not thereby be disturbing too rapidly and crudely the beautiful equilibrium and balance so gently and cautiously built up over the centuries? May not cortisone and ACTH as products of the nervous pituitary axis be better produced by calmness of outlook and peace of mind?

Faith and true belief, by giving a real purpose to life, will achieve a more lasting adaptation to stress than these synthetic products. This is not to belittle the value of the latter in carefully selected cases, nor does it deny that man in his weakness may have to use such expedients. But a word of warning is surely necessary lest by their abuse we endanger and weaken rather than strengthen man's fight for stability. In thus prying into life's secrets, it is wise to step with extreme caution, for by the interference with reaction to disease which these products make possible man could suicidally deprive himself of his only means of defence and unleash forces far beyond his control.

Man must therefore earnestly learn to play his true part in the toil of life, relying on synthetic materials only in direst need. That this is not a mere platitude is shown by the clear pattern which gradually emerges from present day knowledge. It would seem that in the evolutionary programme, from primordial time aeons before man lived in caves in fear of the elements, there evolved the living cell from which man is derived. With stress, the cell adapted itself until by the constant stimulus of environmental change variations of structure developed. Whether the variant is given the title of genetic sport or other name, the mechanism is the same. The unicellular organism found the change to multicellularity safer, and varied cell structures were more quickly and better able to cope with environmental needs. Undergoing constant adaptation to differing environmental states, cell complexity continued to increase until there finally emerged a living type, reasonably well adapted to its surroundings and making the maximum use of the materials about it. At this point in time, no appreciable need for major developmental change being apparent, the situation became stabilized. Where, however, environment was less favourable the search for more amenable surroundings continued. Thus were established different living types, each with cell combinations (or organs) reasonably adapted to surroundings—the fish as complete in its sphere as man in his. However, progress unobtrusively goes onward, for, biologically, stasis means stagnation and death.

Behind all this, its vastness not to be comprehended, stands the omnipotent and insuperable law of Nature, ruthless in its demands for perfection. Because man of all living things has been given the power to think, to speak, to organize and to plan, he contemplates the grandness and complexity of the scheme and realizes that only by some supernatural force could such a system be regulated. With insight he asks guidance from some higher spiritual authority, recognizing that he must believe in the purpose of life or else of his own volition choose to go down. Without this belief he will lack the incentive to withstand pain or severe discomfort. In sickness he will refuse to accept his food, his fluids and his essential needs and with no desire to fight, he will die. Faith therefore will provide man with his most powerful link with environment; it will help him to realize the over-all purpose of life and will give him the peace of mind necessary to physiological adjustment. From his creed he will draw the power to hold out against supreme suffering and untold hardship. Many classic examples could be given of man's tolerance to privation, and from them we might learn of what we may expect from humans under stress. Could there be any more outstanding episode than Scott's Antarctic struggle? "To strive, to seek, to find and not to yield", this requires

belief in the purpose of life—at the going down of the sun such trust is the most sustaining weapon man possesses.

So let us understand life's full pattern and accept its totality. In his brilliant book "The Human Situation", Professor W. Macneile Dixon asks "Is Nature everything we admire in a perfectly ordered world?"; then what of the eruptions of Kukato in 1783 with 40,000 deaths, or the Yangtze floods of 1931 with one million deaths? From an entirely different angle Kenneth Clarke, commenting on landscape painting, states that to anyone but a higher mathematician Nature no longer seems to act consistently in all her operations. He is quick to add, however, that all the science of bureaucracy in the world, all the atom bombs and concentration camps will not destroy the human spirit.

As a swimmer suddenly in turbulent water must change his stroke, so man must fight to remain afloat; he dare not go through life believing everything must go his way. To fail to recognize this feature of our earthly existence is to take life for granted and to expect only the good things. When Hamlet, his "native hue of resolution sicklied o'er with the pale cast of thought", declaimed against his environment: "the time is out of joint, Oh! cursed spite that ever I was born to set it right", he was denying the principle of acceptance of life's pattern and its purpose. May he as a result have suffered symptoms of peptic ulceration or palpitation? And what of Lear's hate, Othello's jealousy?

So we must accept life's design with equanimity and strength, recognizing that there is a baseline of complexity beyond which if we should venture we are lost. The scientist knows that the accuracy of a measurement is determined by the personal error of the instrument, that no common twelve-inch ruler can measure to one-thousandth of an inch. In like manner the physician, using his most refined instruments, cannot hope to achieve the delicacy of information obtained by Nature's own devices. Can we measure pain? Can the electrocardiograph do more than measure physiological changes in tissue? May not the use of the Geiger counter bring us to a point of delicacy of measurement well beyond the human factor? May not these techniques produce a new set of diseases based, not on suffering but on measurable yet harmless anomalies of ionic distribution? Because of human weakness, may not all this lead to increasing neuroses, for how are we to establish a baseline of static normality in any ever-changing kinetic system? Surely we must learn with humility that the artificial heart, however beautifully carved in steel, is never to palpitate with love and affection, that there still exists, and let us hope always will exist, an aspect of life which no man-made instrument can measure.

When we have learned this great lesson, the limitations of over-simplified titles and names for disease will be recognized, and with this newer concept many errors of diagnosis and treatment avoided. There is, for example, the "house-dust reactor" whose symptoms arise from a multiplicity of other perhaps equally important causes, the "asthmatic" whose attacks are as much from environmental stress as allergic contact. In diseases such as "asthma" and "hay fever" we will be much nearer the truth when we realize that respiratory tissue is especially designed to respond to outside stimuli and that any factor upsetting environment will cause change in the respiratory reaction. Skin diseases, peptic ulcer, angina, spondylitis to give other examples, must be regarded from a similar viewpoint. In all of these, although the morbid change may have been present for years, symptoms are of recent origin. The important thing is to know the episode of imbalance which set the symptoms into being. This is more often linked up with external factors than with factors from within. Recognition of this point will lead to a greater alleviation of suffering than diagnosis by label, which by throwing the emphasis on visible organic change gives to the mere title the stamp of apparent authority but only too often the stigma of incurability. As an example, the patient with compensated aortic regurgitation of ten years' duration who suffered left ventricular failure whenever her drunken husband beat her, is readily relieved by the protection afforded in hospital. Was she suffering from the heart lesion or environmental maladjustment? And may not the latter be more amenable to control than the heart lesion?

The patient comes to his physician genuinely imploring help and guidance. On the physician therefore falls the tremendous responsibility of providing the needed support. If the sufferer is made to realize fully all aspects of his disease, he is eagerly prepared to cooperate in a programme of reorganization. Sedatives at most should be used only to help achieve this

purpose, for unless there is a parallel slowing down by the patient, such drugs may have the effect of dangerously increasing the load—a similar process to using the brake and at the same time needing more acceleration to maintain the speed. It is to the whole pattern that we must give our attention. To deny this is to regard the design of living with casualness and insincerity; the important things in life, the matters of principle, will be overlooked and an attitude of indifference to destruction and despoliation emerge. The temporary expedient will be preferred to the real cure, and finally driven to desperate measures in his search for stability, man may attempt to retrieve the situation by an atomic explosion. So may he wreak his own destruction and the temporary expedient finally annihilate him.

A very wise Chinese proverb perhaps helps to give the answer.

If there is righteousness in the heart
There will be beauty in the character.
If there is beauty in the character
There will be harmony in the home.
If there is harmony in the home
There will be peace in the Nation.
If there is peace in the Nation
There will be order in the World.

From Plato's philosophy we learn that "the greatest error in the treatment of sickness is that there are physicians for the body and physicians for the soul, yet the two are indivisible". We should go further and claim not only man's indivisibility within himself, but his complete inseparability from his surroundings. Indeed, in the training of the physician we should carry our anatomical dissections beyond the periphery of skin, for man cannot be dissociated from the things about him; with them he is one. This is the lesson of medicine today.

VARIANTS OF THE BLOOD GROUP GENE D IN TWO NATIVE RACES.

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SEVERAL WORKERS (Stratton, 1946; Race *et alii*, 1948) have shown that the D antigen of the Rh system may exist in different forms, and have suggested that the variants, called D^a, may be the result of mutations within the system. The "low grade" D^a is recognized by the failure of red cells containing it to react with anti-D sera in saline or albumin, together with the ability of such cells to absorb anti-D agglutinins as detected by subsequent elution or by indirect Coombs tests. "Higher grades" of D^a may react in saline with some but not all anti-D sera, and Dunsford (1948) believes that the strength of reactivity in saline with anti-D sera is a measure of further D variants. Dunsford reported the finding of a subject whose red cells consistently gave weaker than usual reactions with many anti-D sera, and considered this an example of a still "higher grade" of D^a. The incidence of "low grade" D^a is low in the white population, but the higher grades probably occur with greater frequency than is recognized.

Recently evidence has been obtained that variants of the D antigen may occur in Australian and New Guinea natives.

Investigation.

The methods described by Mollison, Mourant and Race (1948) were used for all tests, and the scoring method of Callender and Race (1946) employed to record results of titrations. The blood samples had been collected aseptically with syringes and needles and allowed to clot in sterile vaccine vials. Those from Palm Island, an island off the coast of North Queensland, were forwarded to Sydney by air and during transit were packed in sawdust and ice. They were tested seventy-two hours after collection. The samples from Rabaul in New Britain were also forwarded by air and were tested ninety-six hours after collection.

Palm Island Natives.

Samples from 42 Palm Island natives were tested at the one time. The reactions with two anti-D sera were strong (+ + +) in 39 instances, but the remaining three samples

reacted only weakly (+) or w). Further red cell suspensions prepared from the original blood clots of the three weak reactors gave identical results, but indirect Coombs tests with complete and incomplete anti-D agglutinins gave strongly positive results. Four anti-D sera were next titrated against the three weakly reacting cell suspensions and against cell suspensions of other samples of the same batch. In saline the titration scores given by the weak reactors were consistently about half those of the control cells, but no differences were detected when the cells were

exception failed to react with four anti-D sera when a cell suspension was prepared in physiological saline. Agglutination was produced by these sera when the cells were suspended in 30% bovine albumin solution and when tested against the cells by the indirect Coombs test. A further sample of blood from this subject gave identical reactions when tested two weeks later. On both occasions the cells reacted strongly with anti-C sera.

Discussion.

The red cells of the New Guinea native gave results characteristic of "low-grade" D^a cells. It is unlikely that these reactions were produced by in-vitro changes as described by Renton and Stratton (1950), because identical reactions were observed on a duplicate sample and were not encountered amongst 38 other samples collected and transported under similar conditions. Further, the strength of agglutination produced by other testing sera was not impaired.

The reactions given by the blood of the three Palm Island natives resemble those described by Dunsford as "high grade" D^a. In no instance did the cells fail to react with anti-D sera, but in all three instances the reactions were considerably weaker than those given by the remaining samples of the batch. Even if the unusual reactivity of these cells was the result of in-vitro changes before testing, it does not seem unreasonable to conclude that the changes occurred because of some inherent differences in the red cells consistently affecting only the D antigen.

The blood groups of the families require some comment. A.W. (senior) in Family I is reported to be a full-blooded aboriginal and his blood group does not suggest otherwise. Both his wives were half-castes and the children of the first marriage show this racial mixture, both having the S blood group which is characteristically absent from full-blooded aborigines (Sanger, 1949). They are reported as having light-coloured skins and as lacking the typical aboriginal appearances. There is nothing to suggest racial mixtures in the case of Family II, but the B group of both members investigated in Family III is of interest. The B gene is completely absent from Australian aborigines in the Northern Territory and Western Australian regions, but is found in several Queensland areas as both group B and group AB (Sanger, Walsh and Kay, 1951; Wilson *et alii*, 1944). It has been suggested that its presence is due to Melanesian mixing perhaps at some distant date. Both L.G. and C.A. are reported as having the typical appearance of full-blooded aborigines and as being apparently of pure aboriginal stock. There is no suggestion that the New Guinea native is other than of pure native stock.

These considerations do not permit one to conclude that the D variant is definitely associated with pure-blooded aborigines, but it probably does occur in this race. In Figure I the variant has been designated D^a, and its presence in the relatives has been assumed but cannot be detected serologically. In the three subjects whose blood was originally examined (A.W., B.R., C.A.) the variant is almost certainly in the D^aD^a state; but in the relatives it must be in the DD^a state and therefore masked by the presence of D on the opposite chromosome (Race, Sanger and Lawler, 1948).

In this respect it is important to note that in white races the D^a variant has been detected only in the heterozygous (D^ad) state. In the white populations Dd is more common than DD, and the variant D^a is therefore more likely to occur in the detectable D^ad than in the masked D^aD state. On the other hand, in the two native races all subjects are probably homozygous (DD). The masked D^aD would be much more frequent than the demonstrable D^aD^a, which must be rare. This fact would account for the apparent greater frequency of D^a in the white races.

The D variant in the Australian natives is obviously a "high grade" D^a, but this does not necessarily mean that only such "high grades" are present. It is possible that the strength of the reactivity is influenced by the homozygous state. As a result of family studies, Race, Sanger and Lawler (1948) have with hesitation suggested that D^a may show some variable expressivity.

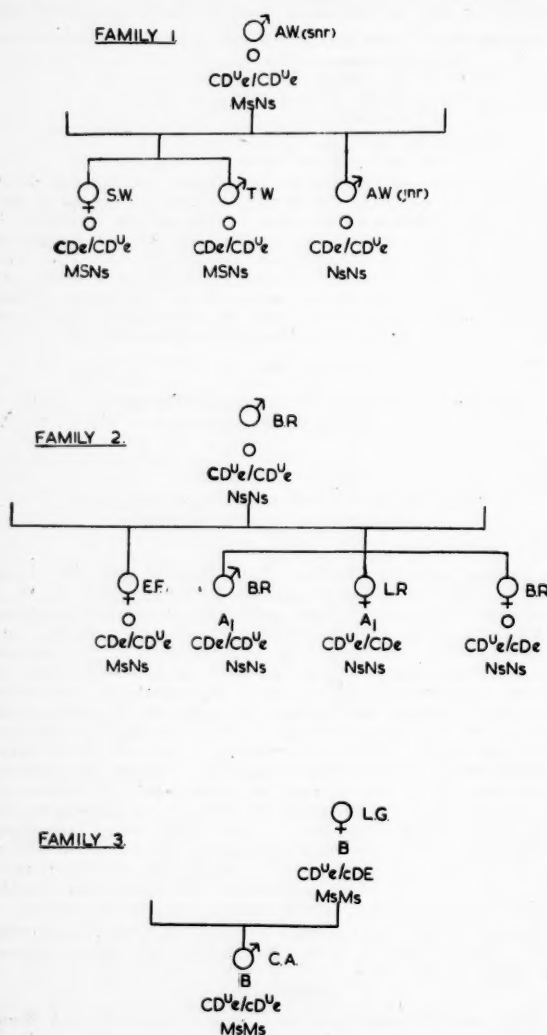


FIGURE I.

suspended in 30% bovine albumin solution and the serum was diluted with the same material. The strength of the reactions with anti-C and other sera producing agglutination did not differ significantly in any of the 42 samples. Further samples were obtained from two of the three weak reactors and from eight relatives, as shown in the figure. The two subjects previously tested gave reactions which were almost identical with those obtained earlier.

New Guinea Natives.

All except one of 20 blood samples received from Rabaul gave strong (+ +) reactions with anti-D sera. The one

Summary.

A variant of the D antigen resembling D^a has been detected in three Australian aborigines and in one New Guinea native. It is presumably present in the homozygous state in all instances and is of a high grade of D^a in the Australian aborigines. Although this is the first reported example in these native races, the variant gene is probably not infrequent, but cannot be detected when its reactivity is masked by the presence of a non-variant D gene.

Acknowledgements.

I am indebted to Dr. Marian Macken for collecting the blood samples from Palm Island, to Dr. and Mrs. R. Hillyard Smith for forwarding the duplicate samples from the same area and for supplying details of the families, and to Mr. E. Shelton, of the Department of Public Health, Rabaul, for forwarding the blood samples from New Guinea natives.

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PENICILLIN LEVELS IN THE SPUTUM FOLLOWING INTRAMUSCULAR INJECTION OF "ESTOPEN".

By G. L. McDONALD AND E. F. THOMSON.

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JENSEN and his co-workers (1950) discovered that in laboratory animals an ester of penicillin—benzylpenicillin diethylaminoethyl ester hydriodide—gave rise to a higher concentration of penicillin in the lungs after intramuscular injection than either crystalline or procaine penicillin. In limited studies upon humans a similar effect was noted.

In 1951 Heathcote and Nassau confirmed these findings in humans suffering from chronic non-tuberculous pulmonary infections. These workers gave their patients a course of 1,000,000 units every twelve hours for one week of the penicillin ester (L.G.1) or a related substance, benzylpenicillin diethylaminoethyl ester hydrochloride (L.G.2); a control series of patients received a similar dosage of either sodium penicillin or procaine penicillin. In most of their patients they estimated the penicillin content of the sputum two, four and six hours after the injection, whilst in others they assayed a twenty-four hour specimen of sputum. In addition they made bacteriological examinations of the sputum before, during and after treatment. Although the number of their patients was small, the results showed a higher level of penicillin in the sputum after L.G.1 or L.G.2 than after either crystalline or procaine penicillin.

The hydriodide ester is now available in this country under the trade name "Estopen". The object of the present investigation was to test the claim that "Estopen", when injected intramuscularly, produces a higher penicillin level in the sputum than does ordinary penicillin.

The investigations of Heathcote and Nassau had shown that the highest sputum levels of penicillin were obtained

two hours after injection in the cases of the penicillin esters and crystalline penicillin. They also confirmed Jensen's finding that considerably higher sputum levels were obtained with crystalline than with procaine penicillin. Hence it was decided in this experiment to compare "Estopen" with crystalline penicillin, and in each case to compare the sputum penicillin levels two hours after a single injection of similar quantities of each drug. To eliminate contamination by saliva the sputum was obtained by bronchoscopic suction.

TABLE I.
Group A.

Name.	Penicillin in Sputum after Intramuscular Injection of "Estopen" 500,000 Units. (Units per Millilitre.)	Penicillin in Sputum after Intramuscular Injection of Crystalline Penicillin 500,000 Units. (Units per Millilitre.)	Difference ¹ (0.1 being used as an approximation for <0.25). (Units per Millilitre.)
F.L.	0.75	<0.25	0.65
N.H.	0.6	0.25	0.35
M.H.	0.4	0	0.4
W.F.	0.75	0	0.75
D.W.	0	<0.25	-0.1
F.H.	0.75	<0.25	0.65
R.O.R.	0.5	0	0.5
R.McM.	0.25	<0.25	0.15
C.L.	0.5	0	0.5
G.T.	0.5	0	0.5

¹ Difference = amount of penicillin in sputum after injection of "Estopen" minus that after injection of crystalline penicillin.

The patients chosen were all suffering from bronchiectasis. They were selected to this extent, that only those patients were used who were producing a sufficient amount of sputum to provide an adequate specimen and to warrant bronchoscopy as a therapeutic measure. None of these patients had received any recent penicillin therapy.

TABLE II.
Group B.

Name.	Penicillin in Sputum after Intramuscular Injection of Crystalline Penicillin 500,000 Units. (Units per Millilitre.)	Penicillin in Sputum after Intramuscular Injection of "Estopen" 500,000 Units. (Units per Millilitre.)	Difference ¹ (0.1 being used as an approximation for <0.25). (Units per Millilitre.)
F.S.	0	0	0
N.Ha.	0	0	0
M.G.	0.4	0	-0.4
D.Wd.	0.75	0.5	-0.25
B.M.	0.25	0.5	0.25
J.E.	0.25	0.75	0.5
G.M.	<0.25	0.5	0.5
K.S.	<0.25	0.5	0.4
M.M.	0.5	0.5	0
V.L.	0	0	0

¹ Difference = amount of penicillin in sputum after injection of "Estopen" minus that after injection of crystalline penicillin.

Twenty patients were thus selected, alternate ones being allotted to each of two groups, A and B. Those in group A were given "Estopen" and those in group B crystalline penicillin. Later on the experiment was repeated, group A this time having crystalline penicillin and group B "Estopen". In this way each patient was used twice, being given "Estopen" on one occasion and crystalline penicillin on the other. In most cases the interval between the two tests for any one patient was two to three weeks, the shortest being nine days. This long interval precluded the possibility of any carry-over of penicillin from the first test to the second.

In each case a single dose of 500,000 units of either "Estopen" or crystalline penicillin was given. Bronchoscopic suction was carried out two hours later and the sputum so obtained was sent to the pathologist for an assay of its penicillin content. The pathologist was not informed whether the patient had been given "Estopen" or standard penicillin.

The method of assay used was similar to that used by Heathcote and Nassau (1951) based on the Heatley plate method as described by Fleming (1950). The test organism used was a twenty-four-hour broth culture of *Staphylococcus pyogenes* strain B.313 (A.C.T.C.). The "seeded" medium was poured into Petri dishes, and holes were bored in the solid medium with a sterile cork borer of approximately 16 millimetres diameter. One hole on each plate was filled with a standard penicillin solution of one unit per millilitre. A standard curve was prepared by measuring the zones of inhibition on a series of control plates.

Results.

The results are shown in Tables I and II. Three patients showed no penicillin in the sputum at all. The reason for this peculiarity is obscure and merits further study. Three others showed a higher level in the sputum after administration of crystalline penicillin than after administration of "Estopen". The remainder showed a higher concentration after administration of "Estopen".

Using 0.1 unit as an approximation for the value "less than 0.25 unit", Dr. H. O. Lancaster in a statistical computation found that the mean of the differences obtained for "Estopen" and standard penicillin was 0.2625 in favour of "Estopen".

This value of the mean divided by the estimate of the standard error of the mean gives a "Student's *t*" of 3.67, which is significant at the 1% level.

At the time of the investigation note was made of the quantity and quality of the sputum obtained and of the presence of any blood-staining, but these had no appreciable effect on the amount of penicillin found in the sputum.

Discussion and Summary.

No attempt has been made to show whether or not "Estopen" is superior to ordinary penicillin in the treatment of bronchiectasis. The investigation merely confirms the claim that an intramuscular injection of "Estopen" gives rise in most cases to a higher level of penicillin in the sputum than a similar injection of crystalline penicillin. This would appear to be a rational basis for its therapeutic use in pulmonary infections due to penicillin-sensitive organisms.

The "Estopen" used in the investigation was kindly supplied by Glaxo Laboratories (Australia) Proprietary, Limited, to whom we tender our thanks. Our thanks are also due to Mr. G. Barr for technical assistance in the penicillin assays.

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Reviews.

ENGLISH PIONEERS OF ANÆSTHESIA.

In a materialistic modern age, it may seem rather paradoxical that the natural philosophers of the seventeenth century devised chemical experiments with the object of explaining certain phenomena in the invisible world of gases. Among these early experimenters we remember that Robert Boyle was the first to demonstrate that atmospheric air was a material substance having weight, as well as other no less remarkable properties; and that John Mayow made significant observations on the processes of combustion and respiration.

In a well-written book, "The English Pioneers of Anæsthesia", Dr. F. F. Cartwright gives an interesting and amply documented account of the work of John Mayow in the

second half of the seventeenth century; and of the discoveries of Joseph Priestley and Antoine Lavoisier a century later, when oxygen and nitrous oxide were better understood and the new science of chemistry was placed on a firmer mathematical basis. It is the contention of Dr. Cartwright that the history of modern general anæsthesia has an early beginning to be found in the biographies of three Englishmen, Thomas Beddoes, Humphry Davy and Henry Hill Hickman, each in widely different capacities making a modest contribution to its belated introduction in 1846. The main theme of the book is the life and work of these three men, chiefly relating to their ideas about the newly discovered gases.

The scholarly, eccentric and highly imaginative Dr. Beddoes will go down to posterity, not indeed for his philosophical vapourings and his peculiar theories of pneumatic medicine, but rather for the invaluable opportunities he provided for young Humphry Davy as his laboratory assistant. In outlining the subject the writer has performed his work with such thoroughness that the long account of the Beddoes Preventive Institution at Bristol tends to become tedious, but the biographies of Davy and Hickman are more effective in sustaining the reader's interest; and the concluding essay, which gives a masterly evaluation of the relative merits of the three pioneers of anæsthesia, leaves little to be desired.

This book, which contains several interesting illustrations, has a real claim on our attention, for the ancillary sciences were beginning to have an irresistible influence on the development of modern medicine at the dawn of the nineteenth century. And there are many indications that it will find general acceptance as a helpful contribution to the history of the subject.

ANATOMICAL BORDERLINES.

It is now thirteen years since Professor Le Gros Clark presented his first essay into the no man's land which separates the territories covered by formal teaching in anatomy, histology, neurology, biochemistry, physiology and other aspects of animal biology. His "Tissues of the Body" has now appeared in its third edition, an indication of the demand by the more curious for information on the twilight zones it illuminates. The volume has been slightly enlarged and there are some new illustrations, but the plan and scope remain unaltered. In such a comprehensive field it is inevitable that the modernization of the various sections should be irregular, for no single person could have kept abreast of advances in every part of the work. Some statements and evidence are retained practically unchanged from the first edition; thus, that the metopic suture occurs in 1.0% of Australian aboriginal skulls, whereas recent work has shown the incidence to be much less than this. Also, Bolk's rather futile speculation on the role of the temporal muscles in the incidence of this suture is retained. Further, a number of facts criticized in our previous notice are reproduced unaltered. Once again we deplore the lack of reference to reproduction, where genetics and such dynamic forces as neoteny could usefully have been employed to illuminate the text. These comments apart, the work remains a tribute to the author's wide knowledge and great industry, and it will enjoy continued popularity for some time to come.

CHILD HEALTH AND DISEASE.

THAT a second edition of Grulee and Eley's text-book, "The Child in Health and Disease",¹ should make its appearance only four years after its first publication speaks highly for its popularity with the medical profession. It also emphasizes the speed with which paediatrics is developing, not only in the matter of diagnostic and surgical techniques but in the interest now being taken in healthy children and in their surroundings.

Grulee and Eley have produced not merely a book but a paediatric library in miniature, with over 1200 pages of clear

¹ "The Tissues of the Body: An Introduction to the Study of Anatomy", by W. E. Le Gros Clark, F.R.S.; Third Edition; 1952. Oxford: The Clarendon Press. Melbourne: Oxford University Press. 9½" x 6½", pp. 418, with 124 illustrations. Price: 55s. 6d.

² "The Child in Health and Disease: A Textbook for Students and Practitioners of Medicine", by Clifford G. Grulee, M.D., and R. Cannon Eley, M.D.; Second Edition; 1952. Baltimore: The Williams and Wilkins Company. Sydney: Angus and Robertson, Limited. 10" x 7½", pp. 1250, with many illustrations, a few in colour. Price: £8 1s. 3d.

¹ "The English Pioneers of Anæsthesia (Beddoes, Davy, and Hickman)", by F. F. Cartwright; 1952. Bristol: John Wright and Sons, Limited. 9" x 6", pp. 348, with 29 plates. Price: 21s.

but smallish print and containing an enormous amount of information. The subject matter has been divided into a hundred sections, or clinical essays, contributed by no less than eighty-seven writers, most of whom occupy senior teaching positions in their medical schools. Some of them are well known in Australia.

A complete revision of the first edition has been made. There is a reasonable uniformity of style, but individual chapters vary, of course, in their merits. Those on pancreatic fibrosis (here described as "mucoviscidosis") and on the functional nervous disorders of children are particularly good. The causation of pink disease is well discussed and the claim made that it is probably a type of acute infectious polyneuritis. New sections deal with adoption, medical supervision of summer camps, cardio-vascular surgery and viral hepatitis.

A compilation of this magnitude can hardly avoid some overlapping and omissions. Many diseases are described twice and some three times, not always similarly. There are, for example, two accounts of Sydenham's chorea, the first stressing the etiological significance of emotional stress and the personality changes during the course of the illness, the second ignoring both. Coeliac disease, on the other hand, is mentioned obliquely in several places, but there is no proper description of the clinical picture or of its management.

The authors have produced a magnificent work, but they seem to have too much material. In future editions they could reduce overlapping by having fewer contributors. A few sections might be omitted altogether, for example, the two pages on "Q" fever which is virtually unknown in children. Without some economies of this sort the work will need to be published in two volumes. The present book weighs six pounds and is too heavy for comfortable armchair reading. None the less, it is well worth a place on any paediatrician's book shelf.

ENDOSCOPY.

ALTHOUGH one may doubt the wisdom of making endoscopy a specialty in its own right, Edward Benedict of the Massachusetts General Hospital, Boston, has for many years practised the highly skilled arts of bronchoscopy, oesophagoscopy, gastroscopy and peritoneoscopy and has embodied his experience in a very readable book.¹ His background as a general and experimental surgeon safeguarded him from the pitfall of developing into merely a skilful technician; this he undoubtedly is, but techniques have properly been regarded as only a means to an end which is the diagnosis and occasionally the treatment of morbid conditions affecting the tracheo-bronchial tree, the oesophagus and stomach and the peritoneal cavity. Living pathology as seen by endoscopic examination is amply described and well illustrated by a large number of coloured plates; where relevant, X-ray plates are also reproduced. Illustrative case reports are given and add to the interest of the book. The techniques described are those developed and used by Benedict himself (he it was who introduced the operating gastroscope in 1948) and differ in some respects from those of other endoscopists. For example, in bronchoscopy cocaine is apparently preferred to less toxic derivatives such as "Decalin", an assistant is required to hold the patient's head and the instrument is introduced with the aid of a laryngoscope. The technique of bronchography is also described, but it is disappointing that the question of general anaesthesia when required for these procedures, as in small children, receives scant attention. This book nevertheless will be of great interest to those practising various forms of endoscopy and a source of authoritative information for those desiring to know the many uses of endoscopy and the help which it may be expected to give in competent hands.

BACTERIA.

In the book entitled "Bacteria", K. A. Bisset and F. W. Moore attempt to cover the natural history of bacteria in 111 pages.² The treatment of this subject is refreshingly

¹ "Endoscopy: As Related to Diseases of the Bronchus, Esophagus, Stomach, and Peritoneal Cavity", by Edward B. Benedict, A.B., M.D., F.A.C.S.; 1951. Baltimore: The Williams and Wilkins Company. Sydney: Angus and Robertson, Limited. 9" x 6½", pp. 384, with 12 coloured plates and 130 figures. Price: £5 7s. 6d.

² "Bacteria", by K. A. Bisset, D.Sc., assisted by F. W. Moore, B.Sc.; 1952. Edinburgh and London: E. and S. Livingstone, Limited. 10" x 7", pp. 132, with 38 illustrations. Price: 20s.

different from all other texts in bacteriology in that it is based on a broad evolutionary concept which provided the opportunity to deal with autotrophs, saprophytes and pathogens with equal emphasis. The authors' main thesis is that the evolution of bacteria resulted from the operation of two mechanisms, firstly, an adaptation from an aquatic to a terrestrial mode of life, and secondly, a loss of synthetic ability leading to the evolution of nutritionally exacting parasites. On these concepts, particularly the first, a classification and description of families and genera is propounded with the object of bringing the study of bacteria more into line with the systematics in other fields, such as botany and zoology. While it cannot be denied that this novel approach is stimulating, and could be usefully considered for lecture material, the book *per se* is not one which could be recommended as a text for students.

One cannot help feeling that too much importance (and space) is given to cytology at the expense of adequate discussion of other characteristics peculiar to and essential in the study of bacteria. Much of the cytology described is beyond the reach of the student's experience at the bench, so that, in the absence of equally balanced presentation of other characteristics, he is left with the impression that cytology is more important than other characters such as culture, metabolism, antigenic structure and pathogenicity. Thus, the condensation of these other aspects has resulted in a shift of emphasis not entirely appropriate to the study of bacteria as a practical discipline.

The author has stressed his belief that simplicity is characteristic of truth, a sentiment with which we agree, but when accuracy and clarity are sacrificed in attaining this ideal then this belief must be abandoned. In many sections of this book the incompatibility between simplicity and clarity is evident. The chapters on culture, antigenic analysis, sterilization and even morphology have been so reduced that they are no longer simple but slightly confusing and factually incomplete. In the chapters dealing with descriptions of families of bacteria statements of doubtful accuracy and unsupported by reference or explanation appear sporadically. These detract from the laudably broad approach at which the authors have aimed.

The general impression is that this book is a worthwhile departure from the conventional study of bacteria, but in its present form fails to strike a proper balance between the functional activities of bacteria on the one hand and their structural characters on the other. As such it cannot satisfy the requirements of students and research workers in medicine, biochemistry and dentistry.

BRAIN MECHANISMS IN CORONARY DISEASE.

N. E. ISCHLONDSKY, in "Brain Mechanisms in Coronary Disease", elaborates his previous thesis of "Brain and Behaviour", which has been previously reviewed in these columns.¹ The book has two appendices; these contain papers on "Conditioned Reflexes" and "The Reflexologic Bases of Personality". There is sufficient material to outline the author's thesis of the importance of the two fundamental processes of the nervous system, excitation and inhibition. They form a mechanism of adaptation, complicated by an opposite process of induction, which can set in train a secondary series of nervous forces. In the process of cerebral integration, excitation and inhibition must be coordinated. The latter is by nature "weak, unstable, fragile and as a rule difficult to evoke and maintain". Further integration demands an accuracy of nervous rhythms in which are included sleep, periodicity of nutritional processes, secretions, heart-beat, respiration, *et cetera*.

Dr. Ischlonsky maintains that individuals in whom the above mechanisms are defective stand out as unstable, "chaotic", inadequate personalities. He maintains that they succumb in large numbers to coronary heart disease.

The author points out that modern civilization is producing an increasing number of cardiac catastrophes, as illustrated by graphs and statistics. The findings are correlated with the increasing tempo of community life, which is preventing the normal relaxation and leisurely rhythms essential for stable integration. The result is reflected in the state of the heart.

¹ "Brain Mechanisms in Coronary Disease: Causation, Treatment and Prevention", by N. E. Ischlonsky, M.D., with two appendices: 1. "From the Conditioned Reflex to the Science of Brain Dynamics." Paper delivered at the XVIIIth International Congress of Physiology. 2. "Reflexologic Bases of Personality." Paper delivered at the Ninety-Sixth Annual Meeting of the American Psychiatric Association: 1952. London: Henry Kimpton. 10" x 6½", pp. 186, with 45 illustrations. Price: 25s.

It is pointed out that the activity of the heart and emotional life have been known from time immemorial. Our language reflects the concept. We know that "Mrs. X. has a 'kind heart' or a 'heart of gold'; that Mr. X. has a 'heart of steel' or a 'heart of stone' and that Mr. Y. has a 'heavy heart'; Mr. N. wears 'his heart on his sleeve'; Mrs. N. is 'lighthearted', while her husband's 'heart bleeds'."

There is recalled the remark of John Hunter, a victim of coronary disease, who said that his life was "in the hands of any rascal who wishes to worry and tease me".

The book sets out to prove on a scientific basis that if we wish to diminish the incidence of coronary heart disease we must attack the fundamentals of living, the training of our minds and the harnessing of our emotions in an orderly manner.

"Brain Mechanisms in Coronary Disease" is well worth a careful perusal.

Notes on Books, Current Journals and New Appliances.

ADVANCES IN PÆDIATRICS.

A CHANGE in publishers since the last volume of "Advances in Pediatrics" has not altered previously established editorial policy.¹ The present volume contains six comprehensive monographs, three from the United States and three from Scandinavian countries. From New York come monographs on advances in the treatment of bacterial meningitis, the nephrotic syndrome in children, and iron metabolism in infants and children. Danish authors write on the relation of vitamin K deficiency to hæmorrhagic disease of the newborn, and Swedish authors deal with angiocardigraphic studies in children and B.C.G. vaccination. All contributors are authorities in their respective fields, and their fully documented and critical reviews should make their readers reliably informed on the subjects dealt with.

THE BIOLOGY OF MENTAL HEALTH AND DISEASE.

A TOTAL of 38 subjects was dealt with by means of set papers and discussion at the Twenty-seventh Annual Conference of the Milbank Memorial Fund held at the New York Academy of Medicine, New York City, from November 13 to 16, 1950.² The material presented has now been published in a volume entitled "The Biology of Mental Health and Disease". The 108 participants include anatomists, physiologists, geneticists, chemists, neuropathologists, pathologists, neurosurgeons, psychologists and psychiatrists. Their various contributions to the subject of how the brain works, normally or abnormally, relate rather to the preclinical or basic medical sciences than to the clinical aspect. It is hoped at a later date to hold a conference dealing with aspects of psychiatry not considered at this conference, namely, sociology, interpersonal relations, psychotherapy, psychoanalysis, the learning process, pedagogy, public health *et cetera*.

PHYSIOLOGICAL CHANGES IN PLASMA PROTEINS.

For over three years the technique of electrophoresis has been used in a research laboratory of the Children's Fund of Michigan to investigate the protein components of blood plasma from human beings in health and in disease. The major portion of these efforts has been directed to determining the electrophoretic patterns of the plasma proteins of women before, during and after pregnancy, and of their infants. Now a volume entitled "Physiological Changes in Plasma Proteins Characteristic of Human Reproduction",³ by

¹ "Advances in Pediatrics", edited by S. Z. Levine, with associate editors Allan M. Butler, Margaret Dann, L. Emmett Holt, junior, and A. Ashley Weech; Volume V; 1952. Chicago: The Year Book Publishers, Incorporated. 9" x 6", pp. 274, with 21 plates and many text figures. Price: \$7.00.

² "The Biology of Mental Health and Disease: The Twenty-seventh Annual Conference of the Milbank Memorial Fund", with 108 contributors and a foreword by Stanley Cobb, M.D.; 1952. New York: Paul B. Hoeber, Incorporated. 9½" x 6½", pp. 680, with 213 illustrations. Price: \$10.00.

³ "Physiological Changes in Plasma Proteins Characteristic of Human Reproduction: Cross-Sectional and Longitudinal Electrophoretic Data for Women during and following Uncomplicated and Complicated Pregnancies", by Icie G. Macy, Ph.D., Sc.D., and Harold C. Mack, M.D. Detroit: Children's Fund of Michigan. 8½" x 6", pp. 178, with one plate and fourteen text figures. *Gratis*.

I. G. Macey and H. C. Mack, has been produced to make the result of these electrophoretic studies available in more complete form than is possible in journals. Copies for free distribution to workers in this field are available from the Children's Fund of Michigan, 660 Frederick Street, Detroit 2, Michigan, United States of America.

A CATALOGUE OF MEDICAL FILMS.

SOMEWHERE about 1000 films are listed in the "S.F.A. Catalogue of Medical Films",¹ which is intended to be a reliable guide to medical films available in Great Britain. They are indexed under subject headings as well as in an alphabetical list of film titles. In most cases a short note describes the content of the film. An appropriate mark is added to the title of films for which a committee appraisal or a personal review is available. Full information is also given about distributors and owners of films and terms of distribution. Although designed primarily for use in Great Britain, this catalogue should be useful to those who are interested in medical films in Australia, and especially to those responsible for compiling film libraries.

MODERN TREATMENT.

LIKE all its predecessors, "The Modern Treatment Year Book, 1952",² which is described as a year book of diagnosis and treatment for the general practitioner, is essentially clinical and practical. Forty articles, each by an appropriate authority, range over the whole field of medicine and surgery, and provide detailed information on modern methods of treatment against a background of sound diagnosis and understanding of the patient's condition.

Books Received.

[The mention of a book in this column does not imply that no review will appear in a subsequent issue.]

"Tropical Medicine", by Leonard Rogers, K.C.S.I., C.I.E., LL.D., M.D., B.S., F.R.C.P., F.R.C.S., F.R.S., and John W. D. Megaw, K.C.I.E., B.A., M.B., Hon.D.Sc. (Queen's University, Belfast), with the collaboration of George R. McRobert, C.I.E., M.D., F.R.C.P.; Sixth Edition; 1952. London: J. and A. Churchill, Limited. 9½" x 6½", pp. 568, with 84 text figures and two coloured plates. Price: 40s.

The fifth edition was published in 1944.

"The Science and Art of Joint Manipulation", by James Mennell, M.A., M.D., B.C. (Cantab.); 1952. Volume II: The Spinal Column. London: J. and A. Churchill, Limited. 10" x 7½", pp. 272, with 148 illustrations, some in colour. Price: 42s.

Volume I deals with the extremities; this volume deals with the physiology and anatomy of joint movement and restoration of lost mobility and also includes the revision of a monograph on backache.

"The 1951 Year Book of Physical Medicine and Rehabilitation (December, 1950-January, 1952)", edited by Frank H. Krusen, M.D., and associate editors Earl C. Elkins, M.D., and George G. Deaver, M.D.; 1952. Chicago: The Year Book Publishers, Incorporated. 8" x 5½", pp. 382, with 160 illustrations. Price: \$5.50.

One of the Practical Medicine Series of Year Books.

"Principles and Practice of Anesthesiology", by Vincent J. Collins, M.D.; 1952. Philadelphia: Lea and Febiger. Sydney: Angus and Robertson, Limited. 9½" x 6½", pp. 528, with 99 illustrations. Price: £5 7s. 6d.

Intended to be "a comprehensive guide in the teaching and practice of clinical anaesthesia".

¹ "S.F.A. Catalogue of Medical Films: A Revised Edition of the Catalogue of Medical Films Published in 1948 for the Royal Society of Medicine and Scientific Film Association"; 1952. London: Harvey and Blythe. 9" x 6", pp. 224. Price: 15s.

² "Modern Treatment Year Book, 1952: A Year Book of Diagnosis and Treatment for the General Practitioner", edited by Cecil Wakeley, K.B.E., C.B., M.Ch., D.Sc., F.R.C.S., F.R.S.E., F.A.C.S., F.R.A.C.S. (Hon.); 1952. London: Published for The Medical Press by Baillière, Tindall and Cox, Limited. 9" x 6", pp. 386, with 84 illustrations. Price: 17s. 6d.

The Medical Journal of Australia

SATURDAY, SEPTEMBER 20, 1952.

All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given without abbreviation: surname of author, initials of author, year, full title of article, name of journal without abbreviation, volume, number of first page of the article. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors who are not accustomed to preparing drawings or photographic prints for reproduction are invited to seek the advice of the Editor.

ON GROWING OLD.

It is natural that the process of aging has interested man ever since, and no doubt before, he devised the means of expressing his precious power of thought in symbolic form. The famous picture of old age given in Ecclesiastes has been subjected to medical analysis; indeed another exposition was recently published in the periodical literature. The study and practice of geriatrics receive not a little attention, and books are published dealing with it. Economists and social workers are interested, and sometimes dismayed, by the prospect of increasing numbers of elderly drones in the human hive, and wonder how they may be utilized in the modern pattern of community life. It will be understood, of course, that the metaphor of the hive must not be pressed to any correspondence with the actual life of the bee, particularly the drone. Diseases which beset the old are being studied with greater care, and the medical and biological problem of when the universal and presumably natural process of aging begins, and when it is complicated with pathological disease states renews its teasing of the thoughtful mind. Hair-splitting casuists may even raise the point that even the study of old age may at times be complicated by the cerebral aging of the biologist or philosopher himself. One of the most amusing, though flippant, contributions to the subject appeared about one hundred years ago, when Oliver Wendell Holmes, in his *alter ego* of "The Autocrat of the Breakfast Table", put into the mouth of still another of his pseudonyms, "The Professor", a journalistic account of a public lecture given by Mark Tully, Esquire, on the subject of old age, and reported in the "*Tempora Quotidiana*". The reporter found it rather heavy going, as many schoolboys have, and retired for a short space for refreshments (*pocula quaedam vini*). He then found a few things clever enough (*dicta haud inepta*), and quoted some of Cicero's sayings, including his excellent remarks on immortality, mainly inspired by Plato. However, he

found the lecture on the whole a credit to the culture and civilization of the day. *De Senectute* can well survive some facetious remarks, for it is, so the Latinists assure us, an essay worthy of a famous man, clear-minded and eloquent. Nowadays the study of old age is being pursued by the physiologists, and two such studies have recently been published. They bring cerebral metabolism and ballistocardiography into the field, and then with these modern weapons bid old age stand and deliver its biological secrets.

Isaac Starr and E. A. Hildreth have collected data of 80 subjects, originally healthy, who have been examined by the ballistocardiograph over a period of ten to fourteen years.¹ The object of this study has been to trace records of cardiac output as years went on, and to compare the graphic records of the presumably healthy with those of persons who either remained healthy for their years, or showed signs of cardio-vascular aging at a later period. They remark that experience has shown that the ballistic forms of records made with this apparatus are known to show gross abnormalities in older persons, when compared with those taken of the young. They have therefore attempted to define the normal more precisely, and to trace how the evidence of age and of pathological change was illustrated by the graphic record. The patients tested were drawn from a total of 200 whose records and histories were filed since the years 1937 to 1939. Those who had no serious illness during the interim were regarded as being in good health. By following up these patients they were able to secure progress records of 80 persons. Briefly they found that changes occurred in the ballistocardiogram with the passage of time, but such changes arose slowly in persons in good health, whereas in those who had lost their previous state of good health changes appeared rapidly. The material so obtained was carefully analysed. Sixty-five of the 80 subjects remained healthy, in accordance with the definition herein accepted, and from these standards were made by which the meaning of changes in the size and duration of the major ballistic waves could be elucidated. In this way it was established that the "I" wave steadily diminished in depth through the process of aging alone, and a similar but lessened diminution of the "J" wave was also observed. As these graphic symbols are, roughly speaking, due to the degree of acceleration of the blood leaving the heart in systole, the rapidity of this acceleration is some measure of myocardial strength, and a shallow "I" wave and a reduced "J" wave correspond with a lowered cardiac force. The changes found in healthy young people over a ten-year period are not significant. Therefore any sudden change should be regarded as symptomatic of a pathological change. The fifteen subjects who failed to maintain good health showed a variety of graphic changes, but a variation in the depth of the "J" wave was a practically constant feature. An interesting suggestion is made by the authors, that the manner of systolic ejection of the blood changes, so that acceleration is kept to a minimum, thus enabling the heart to lift its load more gradually. It is helpful to have some scientific evidence of the way in which the heart conserves its powers, though this is, after all, only part of the process of aging, no more obvious to others than to the subject himself. Joseph Fazekas, Ralph W. Alman and

¹ *Circulation*, April, 1952.

Alice N. Bessman have tackled a different aspect of the problem, that of cerebral physiology of the aged.¹ This work has been made possible by some of the modern techniques used in the investigation of the cardio-vascular system. The authors compared the factors concerned in cerebral blood flow and the cerebral oxygen consumption in persons below the age of fifty years with those of persons over the age of fifty years. The control subjects presented no evidence of disturbance of the central nervous system. The older group was divided into four categories: those with obvious disturbance of the nervous system, those with a recent cerebral vascular accident but no psychic disturbance, those with confusion associated with evidence of cerebral vascular disease, and those with depression of consciousness of organic cause. The significance of differences in the oxygen assay of cerebral arterial blood was found to be slight, but the cerebral blood flow was found to be greatly and regularly decreased in those groups of elderly subjects who had evidence of cerebral vascular disease. Reduction of the cerebral arterial flow and increased cerebral vascular resistance were also found in elderly persons in spite of absence of clinical evidence of involvement of the central nervous system, but these findings were more pronounced in those who had definite evidence of such involvement. The mean levels of cerebral oxygen consumption of elderly persons with or without evidence of central nervous system vascular disease was significantly reduced from that of younger subjects, but appeared to have little relationship to the clinical manifestations, if any, of vascular involvement. These and other observations led the authors to conclude that the disturbances of function so often noted in the central nervous system of the aged are related to decreased cerebral enzyme activity and impaired oxygen availability.

Having arrived at this point, we can but admit that the process of aging is still obscure. We may prove that its stealthy hand is at work in our tissues before we are aware of it or will admit it, but we cannot say with any degree of precision just where the process ceases to be part of the vast scheme of a cyclical universe and where it merges into disease, unless indeed we accept Kipling's summing up of the last state of his dog, and say: "His bones are full of an old disease." Further, the effects of aging and of disease are subtle in organs like the heart and the brain. Even when the blows of arterial disease fall on parts which lend themselves to more direct study, difficulties of diagnosis exist, and there are very definite limits to therapy. We read of King Asa of Israel, who reigned thirty-nine years, and after a devout and most active career suffered from vascular disease of the feet. Scripture tells us that his ailment became "exceeding great" and that "in his disease he sought not to the Lord, but to the physicians" and so he died. We can in truth do little for advanced vascular disease, or for the deterioration of age in those "too lame to march, too cold for loving". But, though the elderly, endocrine therapy notwithstanding, may have to be left with nostalgic thoughts on reading Leigh Hunt's famous and beautiful little tribute to Jenny, there are hopes that the extending range of life may be further increased and widened, so that it may become not only longer, but more useful and pleasant.

¹ *The American Journal of the Medical Sciences*, March, 1952.

Current Comment.

A FAMILIAR CEREBELLAR SYNDROME.

THERE has always been a tendency to regard neurological syndromes as recondite and outside the ambit of the average practitioner, but on the contrary it is frequently found that the objective clinical signs present a unique opportunity for observation. An excellent example of this is found in the signs and symptoms following occlusion of the longest and largest branch of the vertebral artery, which are so striking that even a hazy recollection of the results of this lesion will usually suggest the diagnosis. Occlusion of the posterior inferior cerebellar artery is not really common, but it appears to be not unusual, for G. N. Lewis, A. Littman, and E. F. Foley have collected a series of 28 cases of this condition, which has been known to physicians for over fifty years.¹ These authors state that some 240 references to literature were listed by Louise-Bar in an elaborate review published in 1946, but it does not appear that any other authors have presented so many cases as they have themselves in their own analysis. The features of this syndrome are fully described in text-books, but attention may be drawn to the striking nature of a symptom complex which includes sudden vertigo without loss of consciousness, falling, vomiting, diplopia, dysphagia, and dysphonia, sympathetic paralysis (Horner's syndrome), loss of pain and temperature sense on the same side of the face and the opposite side of the body, paralysis of the palate and ataxia on the same side. The present writers have analysed these symptoms with a view of finding which were most distinctive and frequent. The patients studied were seen in the Cook County Hospital over a period of eleven years, and the after-histories have been followed. Eleven patients were living at the time of the report, and ten of these were reexamined to estimate their present condition. The age incidence conformed to that found in other varieties of cerebral vascular accidents, that is, between the ages of forty and seventy years, though one patient was under thirty. Few patients had a perceptible warning, and an acute onset was common. Vomiting and dysphagia were frequent symptoms and occurred in 70% and 80% respectively. Attention may be drawn to this, for there are surely few conditions in which a patient not only vomits but may also have difficulty, and sometimes substantial difficulty, in swallowing. Milder degrees of the latter symptom were occasionally persistent for some time. Giddiness was almost universal, and troublesome or even severe vertigo caused falling in more than half the patients. Difficulty in speaking was quite common, but usually amounted to hoarseness only. Hiccup was sometimes noted also. The neurological findings need not be described in detail here, but it may be remarked that the authors noted that, while these differed considerably in proportion to the severity of the attack, there was a significant consistency in their distribution. The part of the nervous system attacked contains sensory tracts and nuclei, sympathetic centres, cerebellar and vestibular systems, some cranial nerves and the pyramidal tracts. Lewis and his colleagues found that contralateral impairment of pain and temperature perception on the body was invariable in all cases in which sensory changes were detected, but was not invariable on the face. It is interesting that in all patients reexamined from six months to two years after the episode persistent sensory changes were discovered. Cerebellar signs such as nystagmus were frequent, but they were not found to persist. Considerable variation in pyramidal signs was observed, but these consisted of little more than weakness which was usually transitory. Further details are better left to other published neurological studies, but we naturally wish to know what was the outlook of the patients. Of the 20 patients whose history was known, seven died in the original attack. Unfortunately no autopsies were carried out, but it was known that coincident diseased states existed at the time. Half of the subsequent deaths were due to acute cerebral vascular lesions. How-

¹ *Annals of Internal Medicine*, February, 1952.

ever, eleven patients were living at the time of the report, and eight of ten survivors who were reexamined, though suffering from certain persistent complaints, were able to return to their previous occupations. Though the prognosis in general is that of vascular disease affecting the nervous system, it would appear that we are justified in giving a prognosis perhaps somewhat more optimistic than the spectacular nature of some of the symptoms might seem to warrant. In these days of emphasis on specific therapy there is still good to be done by calling to our aid the triad of careful examination, diagnosis and prognosis.

ALCOHOL VAPOUR AND PULMONARY OEDEMA.

ACUTE pulmonary oedema is one of those acute emergencies which may be caused by several different conditions, and is a clinical concept rather than a diagnostic label. Aldo A. Luisada, Morton A. Goldmann and Ruth Weyl have considered the therapy of this emergency and have made trial of a rather novel and ingenious procedure in clinical practice after making experimental observations.¹ They considered several factors in estimating the value of a new procedure, especially the threat of circulatory shock, as in lesions and disturbances of the heart or peripheral circulation and certain affections of the central nervous system, the risk of respiratory depression, and the possibility of danger to the fetus when acute pulmonary oedema occurs during later pregnancy. Such considerations led to the trial of antifoaming substances by inhalation. Luisada has previously published the results of experimental studies; he showed that antifoaming agents had a favourable action on experimental acute pulmonary oedema. Trial was then made of several procedures which could be used on patients without discomfort or other undesirable action. Administration with standard equipment for gas anaesthesia was first used, with rebreathing as employed in carbon dioxide absorption methods, but it was thought that a safer and simpler method was to use an oxygen tank with a pressure regulator and flowmeter, with a positive pressure mask and special vaporizer. By bubbling the gas through alcohol the percentage of alcohol vapour desirable could be ascertained. Another method tried was that of the nasal catheter placed in the naso-pharynx and attached to the vaporizer. An open tent was also tried, but proved to be too uncomfortable to the patient. Studies on volunteers showed that even persons with disabilities such as cardio-vascular disease could be so treated without distress. The subjects experienced a certain degree of euphoria, but the serum concentration of the alcohol was shown to be less than 10 milligrammes per 100 millilitres even with a rebreathing method. This is far below any clinically appreciable level. The authors quote Goodman and Gilman, who state that a concentration in the serum of 100 milligrammes per 100 millilitres will cause intoxication in only about one-fourth of ordinary subjects. The methods considered best were those employing a nasal catheter or a pressure mask. Clinical trials were then made and the authors present a series of 14 patients with 17 attacks of acute pulmonary oedema. The emergency was due to various causes, including different types of cardiac disease associated with hypertension, coronary lesions and rheumatism. All the attacks were severe, and seven were very severe. The patients were treated in two different hospitals, and only after conventional treatment had been given without success. In addition to this series, alcohol vapour was administered to seven patients with chronic conditions in which they suffered from subacute attacks of pulmonary oedema. In more than half of the severe and acute cases the result of treatment was favourable, and in nearly one-third the relief gained was less dramatic or prompt, but quite appreciable. Tolerant of the treatment was good, but when the pressure mask could not be borne the nasal catheter proved satisfactory. Since the collection of this series the authors have treated 12 other patients with similar conditions, and in these also observed

clinical evidence of lessening of foaming in the pulmonary secretions; toleration was satisfactory, no harmful effects were seen, and relief was obtained in the majority of cases. It is recognized that patients with this distressing complication usually cannot be cured of the underlying disease, but it seems as if they can be given relief.

IDIOPATHIC HYPOPARATHYROIDISM.

WHEN Sandstrom described the parathyroid bodies in 1880, their proximity to the thyroid gland suggested to him the name that has remained. Although they are neither functionally nor developmentally related to the thyroid, the same proximity has in practice played an important part in determining their effective function; or to be more specific, the commonest cause of hypoparathyroidism is unintentional removal of the parathyroids by the surgeon performing thyroidectomy. Fortunately this must be a rare happening nowadays. Much rarer, however, is what has been called idiopathic hypoparathyroidism. A recent survey of the literature by Herman Steinberg and B. R. Waldron² brought to light only 51 cases, to which they add one of their own. Their criteria in selecting cases were a low serum calcium level, a high serum inorganic phosphorus level, absence of renal insufficiency, radiologically normal bones and chronic tetany. On this basis, with certain modifications and further restrictions, they admit 52 cases in all to their review, presenting a summary of each and a full report of their own case. No particularly helpful clues to aetiology emerge from the review. Onset followed acute infectious (viral) diseases in five cases and tonsillectomy in three, but the findings cannot be regarded as significant as they stand. Other possibilities suggested by individual cases received no support from the general survey. The average age of onset was 16.8 years. Pathological material was very meagre. Only three autopsy reports were available. Two of these revealed complete absence of parathyroid tissue despite diligent search, and one revealed complete replacement of the tissue by fat. These findings suggest the possibility of congenital absence of the glands, but this, as Steinberg and Waldron point out, is hard to reconcile with the survival of the patients for at least three years. The most common symptom (reported in over three-quarters of the cases) was chronic tetany, and half the patients had recurrent generalized convulsions, which were often confused with epilepsy. Of the 50 patients whose symptoms were recorded, 49 had frank tetany, tetanic equivalents or convulsions. The commonest sign recorded was cataract (26 cases), followed by poor dentition (19), skin, nail and/or hair changes (13), papilloedema and fungous infections (seven each). Hypocalcaemia and hyperphosphataemia were constant findings. Steinberg and Waldron consider that idiopathic hyperparathyroidism should be suspected in any person, usually in the first or second decade of life, who has recurrent episodes of tetany, tetanic equivalents (paraesthesiae, numbness, muscle cramps, laryngeal stridor) or convulsions, particularly in the presence of poor dentition, cataracts and ectodermal dysplasias. If, in addition, a low serum calcium value and a high serum inorganic phosphorus value are found in the absence of chronic renal disease, chronic intestinal dysfunction, osteomalacia or rickets and a past history of thyroid surgery, the diagnosis is justified. It is interesting to note that death as a direct result of hypoparathyroidism appears to be unusual, although the morbidity is great. Fortunately, effective treatment is available, the drug of choice being A.T.10 or dihydro-tachysterol. This is probably best used alone, but it may, though not ideally, be supplemented with calcium wafers to reduce the expense of treatment. The results of treatment with A.T.10 (with or without calcium or concentrated vitamin D preparations) have been uniformly "good". It is to be noted that parathormone therapy, although true replacement therapy, is unsatisfactory, and attempts at parathyroid transplantation have all failed.

¹ *Circulation*, March, 1952.

² *Medicine*, May, 1952.

Abstracts from Medical Literature.

RADIOLOGY.

Osteitis Pubis.

T. LEUCUTIA (*American Journal of Roentgenology*, September, 1951) states that *osteitis pubis* is a self-limiting disease usually engendered by urological surgery. It follows suprapubic and, especially, retropubic prostatectomy and, rarely, transurethral prostatectomy and other operations in which the bladder has been opened suprapubically. It is not presumed to follow uncomplicated perineal prostatectomy. Occasionally it has followed external trauma to the pubic region, pyelonephritis and other non-surgical causes. Its clinical features are excruciating pain, tetanic contractions of the muscles with pull on the affected portions of the bone, and in many instances complete disability lasting for many months. Characteristic radiographic changes are usually seen. A certain interval must elapse, however, before these changes become manifest. Once their presence has been confirmed, progressive destruction of the bone is observed, reaching a self-limiting peak. Then the process is reversed and gradual regeneration of the bone takes place. Accordingly, one may distinguish between changes incident to three stages of development. (i) The prodromal stage usually lags one to seven weeks behind the onset of the clinical symptoms and four to twelve weeks behind the onset of the disease or the time of the operation. X-ray findings usually remain negative. In a few instances there may be evidence of a slight fraying of the corners of the symphysis or a faint fuzziness of the rami of the pubic bones. (ii) The first signs of the destructive stage appear most commonly in the medial portion of the pubic corpora, extending gradually into the pubic rami and towards the ischial tuberosities. The skiagrams in this stage show roughening and fraying of the periosteum with woolly or moth-eaten rarefaction of the affected portions of the bone. This is especially pronounced about the symphysis and, if associated with absorption of the cartilage, may create the impression of separation of the symphysis. This is followed by pronounced decalcification, which may become the outstanding finding on subsequent skiagrams. However, even in the severest cases no sequestration of the bone is observed, although, occasionally, when the periosteum is lifted together with the underlying bone by the muscle attachments, the image of a false sequestrum may be encountered. (iii) The regenerative stage occurs after a self-limited period of two to eight months, with slow recalcification, leading to full restoration of the bone within another six to twelve months. In the early part of this stage areas of rarefaction may be seen intermingled with zones of beginning reossification. In time the osteoporosis completely disappears, and solid bone with normal trabecular arrangement supervenes. The symphysis may remain widened, but most frequently it is greatly narrowed and ankylosed. In the completely

healed cases X-ray examination reveals slight osteosclerosis of the formerly affected parts of the bone with a very dense symphysis and numerous spurs as a result of the periosteal new-bone formation at the sites of the muscle attachments. These spurs are especially pronounced along the inferior pubic rami and on the ischial tuberosities. The most important lesion from the point of view of differential diagnosis of *osteitis pubis* is the frank osteomyelitis. The two outstanding criteria of differentiation are fever and sequestration, both of which are present in osteomyelitis and absent in osteitis.

Solitary Pulmonary Necrosis.

RUSSELL WIGH AND FREDERICK R. GILMORE (*Radiology*, May, 1951) have reviewed 160 cases of bronchogenic carcinoma. They state that although in 22% of these 160 cases routine radiographic procedures demonstrated single or multiple abscesses, in 10% of the total cases a solitary cavity was found. Since a solitary excavation has usually suggested a benign abscess, a statistical criterion was sought to establish the probability of either simple abscess or malignant neoplasm as accounting for it. It was found that a statistical reversal has been occurring for the ratio of frequency of solitary necrosis within or from pulmonary neoplasm, especially bronchogenic carcinoma, to that of lung abscess. Apparently this is due to the use of antibiotics and chemotherapy as prophylaxis and during the early stages of infection. At the present time, for all age groups, this ratio can be considered near unity; after the age of forty years, however, solitary neoplastic necrosis is 1.5 times more common than benign non-tuberculous abscess. Whenever the differential diagnosis arises, therefore, greater weight should be given to bronchogenic carcinoma, at least after the fourth decade. Of the many X-ray features analysed, several emphasize the neoplastic origin of the necrosis and further enhance the probability of correct diagnosis. In the smaller group, in which an isolated cavity is distal to an obstructing endobronchial carcinoma, segmental or lobar atelectasis is present. Atelectasis in benign abscess is rare, and when present it is of minor degree. Since this is universally recognized, atelectasis usually leads to simple bronchoscopic inspection, and in most instances the tumour, being near the hilus, can be seen. Errors or delays in diagnosis should therefore be minimal. In the larger group, in which the solitary cavity is actually an excavation in the neoplasm, the absence of atelectasis makes the resemblance to abscess of inflammatory origin more pronounced. This similarity together with the past association of necrosis with the concept of infection does produce both misdiagnosis and delay. The radiological criteria that are suggestive of a necrotic malignant neoplasm rather than simple lung abscess are (i) a well-circumscribed mass, (ii) a centrally located cavity, (iii) a thick, easily defined wall, (iv) an irregular or actually nodular inner wall, (v) a lesion crossing or bulging into another lobe, (vi) the absence of parenchymal inflammatory change elsewhere, and (vii) metastases. Since bronchoscopy with cytological study of the secretions or saline washings of the affected bronchopulmonary area can produce positive evidence of neoplastic cells in as high

as 90% of cases of carcinoma, the opinion of the radiologist can be easily confirmed. In some of the cytologically unconfirmed cases there may be X-ray evidence of cancer metastasis. If in the few remaining unconfirmed cases a trial of medical therapy seems warranted clinically, this should not be continued for more than three weeks in the absence of definite improvement before diagnostic thoracotomy is undertaken.

Wilms's Tumour of Infancy and Childhood.

WILLIAM BENZING, JUNIOR (*Radiology*, May, 1952), reports eight proved cases of Wilms's tumour, and discusses the histogenesis of the condition. He states that, in view of the various theories, it is probably best to consider it as an embryonal neoplasm of indefinite origin. Pathologically the neoplasm is found to be a mixed tumour composed of multiple tissues of mesodermal origin, usually of an embryonal character. The growth of the tumour is silent, and in most cases the presenting symptom is an abdominal mass, with secondary symptoms resulting from the mechanical effects of its presence. The diagnosis is usually not difficult, the urogram being a valuable diagnostic adjunct, although it reflects nothing absolutely characteristic of this particular neoplasm. The prognosis is poor. It is not influenced by the histological type of tumour or by its size, but rather by the age of the patient, there being a much higher cure rate in patients under one year of age than in older children. Recurrences usually appear within twelve to eighteen months, so that freedom from the disease after two years probably means a cure. Recurrences have been reported, however, after three and four years. In treatment probably the most impressive figures are those of Gross and Neuhauser, of the Children's Hospital, Boston. They reported 96 cases. From 1914 to 1930 there were 27 cases with four cures, and from 1940 to 1947 there were 38 cases with 18 cures. The prognosis should be guarded. Some apparently with encapsulated and readily removable tumours may show local recurrence or metastasis months or years later. On the other hand, seven, ten and twelve year cures have been reported in inoperable cases in which surgery was confined to biopsy and was followed by X-ray therapy. There seems to be fairly general agreement that neither surgery alone nor irradiation alone is sufficient, but that a combination of irradiation and surgery is the treatment of choice. Difference of opinion exists as to the sequence of the two measures. There are many firm advocates of pre-operative irradiation, though some writers are of the opinion that delaying surgery jeopardizes the patient's chance of survival. It cannot be denied that irradiation has a tremendous effect upon some of these tumours. It certainly should not be withheld in the inoperable case, no matter how black the outlook may be. There is little or no controversy concerning the importance of post-operative irradiation, though there is some difference of opinion as to the quantity to be administered. Jacox and Cahill advocate an estimated tumour dose of 4000r to 5000r. Bixler, Stenstrom and Creevy give an estimated tumour dose of 2500r to 3000r.

PHYSICAL THERAPY.

Radioactive Cobalt.

J. E. ROBERTS (*The British Journal of Radiology*, June, 1952) states that the use of isotopes for radiation therapy has made rather disappointing progress by comparison with the advances in diagnostic studies. In the field of internal therapy there have been the limited successes of the radioactive isotopes of iodine and phosphorus. Another field is the use of isotopes as direct alternatives to radium in conventional radiotherapy. For general radiotherapy, radioactive cobalt, so-called "cobalt 60" has many attractive properties. In England a number of schemes are in progress under the guidance of the Medical Research Council to investigate the possibilities of this isotope as a direct alternative to radium in conventional techniques, and some centres are planning telecurie units with large quantities of cobalt. Radioactive cobalt 60 has a half-life of 5.3 years and a mean γ -ray energy of 1.25 million electron volts. A large cobalt telecurie unit gives a source of penetrating radiation very similar to a two to three million volt X-ray unit, without the electrical problems of such units, but with some problems of its own. It has been suggested that caesium 137 or cerium 144 may replace cobalt for such units in the next few years. Large cobalt units are being made for clinical use and are being used in Canada at present.

Actions of Radiations on Living Cells in 1946 and After.

L. H. GRAY (*The British Journal of Radiology*, May, 1952), in the second Douglas Lea Memorial Lecture, summarizes Lea's contributions to radiobiology and deals with developments in the subject since 1946. He states that Lea and Alper started an investigation of irradiation of bacteriophage S13 in high dilutions, and the work has been continued by Alper. Inactivation, which is exponential, occurs, but there is also delayed inactivation occurring after the end of the irradiation. The study of virus inactivation by ultra-violet light has revealed an aspect of biological recovery from radiation damage which was hitherto unsuspected. This is the phenomenon of photoreactivation. This was discovered in 1948, independently, by Dulbecco working with a bacteriophage which attacks *Bacterium coli*, and Kelner working with the mould *Streptomyces griseus*. The phenomenon has since been observed in other organisms—in sea urchin eggs, in bacteria and in *Paramecia*. Photoreactivation has not as yet been observed to follow damage induced by ionizing irradiation. In all instances the primary damage has been induced by ultra-violet irradiation. Another development has been the knowledge that gene mutation and chromosome structural damage characteristically produced by ultra-violet and ionizing irradiation may also be induced by chemical agents. These chemical agents have been given the name of "radiomimetics". Of the substances so far examined, those which cover the widest range of radiomimetic characteristics are the sulphur and nitrogen mustards. These have been shown to produce the following types

of genetic damage: (i) Mutations, simple chromosome breaks and translocations in *Drosophila* sperm occur. (ii) Nitrogen mustards have been shown to produce a wide range of biochemical mutants in the mould *Neurospora*, apparently identical with those produced by irradiation. (iii) Studies of plant material have shown that chromosome stickiness, chromosome breaks, interchanges and various aberrations characteristic of radiation damage are produced by mustard treatment. (iv) In a population of *Bacterium coli*, exposed to a heavy dose of irradiation, the survivors are found to be resistant to further exposure. They are resistant to nitrogen mustard. It now appears from the work of Loveless and Revell, who have studied chromosome damage induced in *Vicia* by a variety of chemicals, that the frequency distribution of breaks along the chromosomes is different for each agent. It is a fact, too, that the stage at which cells are most sensitive to chromosome damage by chemicals is not the same as that at which they are most sensitive to irradiation. With chemicals, the stage has been shown to be the beginning of interphase, whereas with radiation it is just before or in the early stages of prophase. Much study has been given to the effect of different types of ionizing irradiation on pure water. With regard to the production of chromosome aberrations by ionizing irradiation, it has been found that when material is exposed to X radiation in the absence of oxygen, the yield of aberrations is reduced twofold to threefold. Material is found to be less sensitive to X radiation, too, if exposed in the presence of a variety of chemicals, including cysteine.

Supervoltage Radiotherapy.

B. W. WINDEYER (*Journal of the Faculty of Radiologists*, April, 1951) states that the term "supervoltage radiotherapy" is now most frequently used to describe treatment with X rays generated at a minimum potential of one million volts. There are for consideration machines which can produce X rays at one, two or four million volts, and others at ten, twenty and fifty million volts. The latter group, which are linear accelerators, betatrons or synchrotrons, are still in the stage at which fundamental physical and biological research work is necessary, and data must be accumulated before any routine application to patients can be considered. In the former group, adequate physical and biological data and clinical experience are available, and routine therapeutic application is practicable. The majority of British radiotherapists have concluded that there is a useful place for apparatus in the one to four million volt range in the equipment of a radiotherapy centre which treats a large number of patients. In fact, it appears that without such equipment it is not possible to give any adequate treatment to a small but definite group of patients with deeply seated lesions. This view has been accepted in the National Health Service of Great Britain, and arrangements have been made for the installation of apparatus of this type, in the first instance in each of five regional radiotherapy centres. The apparatus which has been chosen is a four million volt linear accelerator which has been developed by the linear accelerator group of the Atomic Energy

Research Establishment. This design will provide a machine well suited to clinical use with ease in movement over an adequate range, accuracy in positioning, and high output of X rays. The author refers to the following points of interest: (i) Supervoltage radiotherapy in the one to four million volt range is governed by the same principles which have governed all previous radiotherapy. Certain tumours are radiosensitive, and certain tumours are radioresistant. It may be that the different quality of radiation may have the effect of rendering some tumours of moderate radiosensitivity more amenable to treatment and more likely to undergo permanent regression. It is probable that any improved results with X rays of one to four million volts are mainly due to alterations in dosage distribution and the possibility of reducing the amount of irradiation in normal tissues. (ii) Some improvement can be expected in the results obtained in certain deep-seated lesions, such as carcinoma of the rectum, bladder, cervix and perhaps oesophagus, which have not previously been amenable to X-ray therapy at the usual voltage. (iii) With a variety of more superficial lesions adequate dosage can be given with a reduction in the amount of normal tissue irradiated, with simplification of treatment planning, and with lessening of reaction and discomfort to the patient. (iv) There is a smaller integral dose and less tendency to radiation sickness. (v) There is less likelihood of bone necrosis. It is essential to have an adequate staff of trained medical radiotherapy personnel working in the closest association with trained hospital physicists having an adequately equipped department with research laboratories and workshops at their disposal. These supervoltage machines fill a gap in our present armamentarium.

Cystic Hygroma of the Neck and Mediastinum.

GEORGE F. PFAHLER and HENRY H. PERLMAN (*The American Journal of Roentgenology and Radium Therapy*, April, 1950) describe the successful treatment with X rays of cystic hygroma of the neck and mediastinum. They state that these tumours are rare. Treatment in the past has been surgical, but many are inoperable, particularly when there is an extension into the mediastinum. If untreated, the tumour is liable to the development of acute infection, and the mortality then is high. Several papers have been published on the treatment of this condition by radiotherapy. Figs from the Mayo Clinic reported 12 cases of treatment with radium moulds with three successes. Others have reported cures by X irradiation. It is recommended that treatment be given as soon as the condition is noticed, because, like angiomata, the condition is more radiosensitive in the early stages. The authors report three cases of cystic hygroma with mediastinal extension in which treatment was by external irradiation. It is considered that adequate treatment can be given without any effect upon the growth centres, and that X-ray therapy should be the first method of treatment of these conditions with mediastinal extension. If, subsequently, surgery is advisable, the amount of irradiation given will not interfere with this.

Special Articles for the Clinician.

(CONTRIBUTED BY REQUEST.)

XXXVIII.

ACNE.

SEVERAL skin conditions are prefixed by the term "acne", but by common usage if there is no further qualification *acne vulgaris* is the skin disease implied.

The so-called acne diseases are in some way or other associated with the sebaceous glands. No attempt will be made in this article to describe all the acneiform eruptions.

ACNE VULGARIS.

Acne vulgaris is so common that it is estimated that at least 90% of the population has had it to a greater or less extent. It is caused by inflammatory and obstructive reactions within the sebaceous glands and the pilo-sebaceous ducts. A feature of the complaint in some stage or another is the formation of the comedo or blackhead. A comedo consists of horny cells, sebaceous secretion, acne bacilli and often staphylococci. The outer aspect of the comedo is dark-coloured from oxidation of the horny layer, hence the popular expression "blackhead".

Ætiology.

Acne vulgaris is essentially a complaint of adolescence, although it may appear as early as the age of ten years, especially in girls, and as late as seventeen or eighteen years. It is now accepted that the dominating factor in causation is an androgen stimulation of the sebaceous glands and probably also of the horny layers of the epidermis. Heredity also plays its part, as the writer has observed on numerous occasions.

During the second World War many servicemen developed such severe acne in the tropical zones that the condition became known as "tropical acne". Many of the sufferers had had little or only mild acne before serving in these areas, and it would appear that heat and sweat must be incriminated. Belisario (1951) also considers that the drinking of chlorinated water may be a factor. There is no doubt that certain foods and drugs aggravate the complaint. Bromides and iodides are the chief offenders. In the drug category the writer a few years ago saw several members of the United States Merchant Navy suffering from the condition and was at a loss to account for the sudden onset even after close questioning. He learned afterwards from a well-known dermatologist in Los Angeles that they had been taking "iodized salts", and he felt sure that this was the explanation.

With regard to foods, it is advisable to omit the following: the four "c's"—cheese, cocoa, chocolate and cream—"meat from the pig", and foods cooked in grease. All are in agreement that chocolate is the worst offender.

Clinical Features.

Acne occurs mainly on the face, chest and back; but experience shows that it is less common on the chest and back in females. It is convenient to describe some different phases of acne, as follows: (i) mild acne with blackheads, "open pores" and superficial pustules; (ii) a more severe form, in which a certain amount of scarring or pitting has developed; (iii) a very disfiguring type, in which cysts and abscesses develop, leaving deeper scars of a permanent nature.

Prognosis.

In many mild cases the condition disappears without treatment, and severe forms of acne can be greatly influenced by suitable therapy.

Treatment.

Over and over again the writer (Upton, 1950) has seen patients with acne of the second and third types, who have been told: "Your pimples are natural to your age and you will get better in time." Many of these patients will carry scars for life despite any form of treatment. How much more sensible would it be to treat mild forms of the condition along simple lines! If in spite of such treatment the condition grows worse, and if the medical adviser is no longer interested, surely he should refer the patient else-

where. It should hardly be necessary to point out the mental distress caused by such neglect, especially in the case of young women.

Should a female sufferer be allowed to use cosmetics whilst undergoing treatment? Some authorities think that cosmetics "block the pores" and therefore should not be used. Cosmetics are here recommended, and strongly so, because the blemishes are hidden somewhat, and who can deny the effect of this on the morale or make-up of the average young woman? Here is the practical point: cosmetics should be washed off before the acne "drill" is commenced.

External Treatment.

In the mild forms of *acne vulgaris*, the following procedures have been found useful: (i) Steam the face for five minutes. (ii) Pinch massage the face for five minutes. (iii) Wash the affected parts with hot water and simple soap. (iv) Dry the affected areas. (v) Dab on the following lotion: Sulphur Precipitatum 2% to 5%, bentonite 2%, in calamine lotion. (vi) Leave off treatment for a few days if the areas become too sore. (vii) Carry out the treatment at night. (viii) The application of hot packs may be substituted for steaming on the chest and back.

For the more severe forms of acne there is one outstanding treatment, and that is superficial X-ray therapy. X-ray treatment given in small doses to suitable subjects is free of risk, and no patients showing scars or cysts should be denied it. No point is served in a general article like this by the giving of details. Suffice it to state that X-ray therapy should be given only by those competent to assess the type of skin and dosage required. If in conjunction with other methods a reasonable amount of X-ray treatment has not been successful, then there is no point in risking necrosis. Coarse, greasy skins are more tolerant of X-ray therapy than dry, highly coloured skins.

Let it again be emphasized that there is no need to use this form of treatment in mild cases. It is reserved for the more obstinate types of acne with scarring. Often the cystic and deep-seated pustular types are also influenced.

One should never hesitate to make small incisions into lesions that appear to have localized pus. One is not dealing with an acute inflammatory process.

In addition to the acne drill, once a week a gentle attempt may be made to express blackheads with a comedo extractor; this can be done after the steaming procedure. Frequently it is not necessary.

Internal Treatment.

One would advise the avoidance of drugs or foods which are known to aggravate the condition. If patients suffer from anaemia or constipation or have gross toxic foci, these should be attended to along general lines. Many enjoy excellent health apart from the discomfort and disfigurement.

Penicillin exhibited both internally and locally is useless except for some transient help to the pustular aspect. Acne vaccines, on the whole, give disappointing results. The fashionable and latest treatment is the prescribing of estrogenic preparations to counteract the excessive production of androgens. There is a difference of opinion as to their value and their ultimate safety. Their use is still in the experimental stage, and the writer cannot yet make up his mind about their usefulness in his limited experience. Some competent authorities advise for girls over the age of seventeen years the administration of 0.25 milligramme of stilbestrol once a day for ten to twelve days, commencing with the menstrual periods. This dosage has been known to stop the menstrual flow, which has not returned for three or four months even after the drug has been withdrawn. In the treatment of males the same drug has been prescribed in doses of 0.5 milligramme per day for six to eight weeks. Belisario (1951) advises larger doses for female patients, such as 0.5 milligramme of stilbestrol twice a day for ten to fourteen days after the menstrual period. He has rarely encountered intolerance.

In obstinate cases stilbestrol may be given a careful trial. With accumulative experience from group workers, dermatologists, physicians and gynaecologists, dogmatic assessment should soon be possible. If there is no obvious improvement after a short and careful trial, it is well to exercise great caution until more is known about this form of therapy.

INFANTILE ACNE.

Infantile acne (grouped comedones in infants) is not so rare as some text-books indicate. It usually occurs on the face and chest after the application of oils and greases.

These preparations are rubbed into the skin of the face to relieve teething discomforts, or applied to the chest in the treatment of colds.

In young boys, long before the time of puberty, the condition may be observed on the forehead and the adjacent hair margins. There is often the history of the liberal use of cheap hair oils on the scalp. In a few cases it is difficult to explain the causation.

The clinical picture is one of blackheads with little or no pus formation.

Treatment is along the general lines of that used in mild adult *acne vulgaris*. A weak calamine and sulphur lotion is applied, and the comedo extractor may be used carefully, either by the medical attendant or by the patient's parents. Sulphur dermatitis must be borne in mind. To prevent recurrences oils and greases should be avoided as much as possible.

ACNE KELOID OR SYCOSIS NUCHÆ.

Acne keloid (or *sycosis nuchæ*) is a distressing and painful condition confined mainly to the back of the neck in young men. It is a staphylococcal infection of hair follicles, invading also the sebaceous glands and the subcutaneous tissue. It may develop after *acne vulgaris*, but is often preceded by *impetigo contagiosa*, boils and carbuncles. Clinically it is characterized by scar formation, retention cysts and exudation of pus. The condition is as a rule well established by the time the patient is referred to a dermatologist.

During the active stages, treatment with aureomycin ointment and filtered X-ray therapy are recommended. Plastic surgery may be indicated when scarring is severe.

ACNE NECROTICA (ACNE VARIOLIFORMIS).

Acne necrotica (acne varioliformis) has no connexion with *acne vulgaris*. It is a condition occurring chiefly in adult males. It is a form of folliculitis, but the exact cause is not known. Staphylococci are usually recovered from the lesions. The attack comes on suddenly, the lesions appearing in crops mainly on the scalp and forehead. At first there are small papules or papulo-vesicles, often of a brownish colour. The condition is very irritable and the lesions are often scratched off. Sometimes in severe cases small pits are observed.

An attack usually responds to treatment, but recurrences may be troublesome. In the latter case, toxic foci must be sought.

In treatment the use of "Vioform" or "Cremoquin" ointment is recommended. If a cleaner application is desired, then salicylic acid (3%) and precipitated sulphur (3%) in a greaseless cream may be efficacious.

ACNE EXCORIÉE.

Acne excoriée is frequently encountered in dermatological practice. It results from a habit formed by young women who are always picking out or scratching out blackheads or small acne papules. Sometimes there is little or no abnormality to be seen on the skin.

By way of treatment, with most girls "a good talking to" and a warning are sufficient. The warning is that permanent scars may develop from this silly habit. Psychotherapy is required in some instances. Never prescribe bromides "to settle the nerves", for fear of producing an acneiform eruption or making the previous eruption worse. If a sedative is required, phenobarbital may be added to a "tonic".

ACNE ROSACEA (ROSACEA).

Acne rosacea (rosacea) is included only because some text-books still retain the title "*acne rosacea*". Most authorities prefer the term "*rosacea*", as the condition has little or no connexion with *acne vulgaris*. *Acne vulgaris* is essentially a disease of adolescence, whereas *rosacea* seldom commences before the age of thirty years and more often not before forty. It is secondarily a disease of sebaceous glands, whereas *acne vulgaris* is first observed in the pilo-sebaceous apparatus.

The condition is more common in women than in men, and especially so before or at the time of the menopause. However, it is far from rare in the adult male. It is usually associated with gastric disturbances, utero-ovarian diseases, exposure to wind and sun or neurogenic factors (Brodie, 1952). A predisposing factor is without doubt heavy consumption of tea or alcohol; hence the popular label "tea blossom" or "grog blossom".

The eruption is manifested on the face and never involves the chest and back. This grouping of lesions is often called the "harlequin" distribution.

It is convenient to describe the following different stages, although there may be no clear-cut division: (i) areas of temporary flushing; (ii) areas of permanent flushing, especially on the cheeks, where the superficial blood vessels are permanently enlarged; (iii) areas of permanent flushing with pustules but no comedones; (iv) pronounced hypertrophy of the sebaceous glands of the nose producing the so-called "potato" or "cauliflower" nose (the medical term is rhinophyma); this type may appear independently of the other phases.

In most cases the condition responds to treatment.

In the differential diagnosis, occasionally rosacea may be confused with discoid lupus erythematosus. The latter condition usually occurs on the face, but may appear elsewhere.

In a typical case there are well-defined patches of erythema with scaling and atrophy. The scales may be removed, small pits being left. This stippling is caused by plugging of the sweat and sebaceous glands with the horny scaly layer of the epidermis.

Some authorities advocate the carrying out of a test meal examination as a routine measure, because many patients have too much, too little or no free hydrochloric acid. This procedure is not always necessary. Flushing food and drinks, especially tea and alcohol, should be avoided, or at least cut down to a minimum. Hot drinks, curries, spices, condiments *et cetera* should be banned. Many patients eat too quickly.

In addition to advice about diet, a simple alkaline medicine such as *Mistura Rhei et Sodæ* with or without small doses of sodium phenobarbital may be tried in the first place. If there is no improvement, then dilute hydrochloric acid may be prescribed, 30 to 60 drops to be put in a glass of water and sipped with meals. Should the condition not respond, then further investigation is necessary. Local treatment has some value. Calamine lotion containing precipitated sulphur (2%) is dabbed on at night and washed off in the morning. For the severe pustular type, especially on the chin, X-ray therapy is of a great help.

The treatment of rhinophyma is surgical.

CONCLUSION.

In a general article of this nature, no attempt has been made to cover all aspects of the various acne eruptions under review. The writer has endeavoured to include the main points of interest to the clinician with emphasis on his own experience.

W. C. T. UPTON,
Adelaide.

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British Medical Association News.

SCIENTIFIC.

A MEETING of the Special Group on Aviation Medicine of the British Medical Association was held in the William H. Crago Council Chambers, British Medical Association House, 135 Macquarie Street, Sydney, on February 25, 1952, AIR VICE-MARSHAL E. A. DALEY in the chair.

Quarantine Aspects of Aviation Medicine.

DR. C. WILBUR, Deputy Director of Health, New South Wales, Commonwealth Department of Health, read a paper entitled "Quarantine Aspects of Aviation Medicine" (see page 393).

DR. A. JOHNSON opened the discussion by asking Dr. Wilbur if he considered that one's family should be vaccinated against smallpox.

Dr. Wiburd replied that he considered it advisable for all persons to be protected against the disease.

DR. PENNINGTON asked why it was customary to insist on vaccination of an unvaccinated traveller entering from overseas.

Dr. Wiburd replied that a person might be exposed to infection on his way through some of the epidemic areas. If he was vaccinated within a couple of days after exposure to infection—some people said as late as four days afterwards—there was a very good chance that smallpox might be aborted. In any case vaccination did offer an extra measure of protection so far as the population of the country was concerned.

SURGEON-COMMANDER R. M. COPLANS mentioned the difficulties in obtaining proper recognition of service vaccination and inoculation records by some other countries, and shortage of the forms used. He also drew attention to the fact that a person could enter the United Kingdom from the Channel Islands without quarantine inspection.

In reply to the first point, Dr. Wiburd said that in Australia it was the practice of the quarantine officer who went aboard all Her Majesty's vessels to carry with him a supply of the necessary forms, which were completed by the surgeon on the spot. He believed that it was a fact that there was no medical inspection required of any air passenger who arrived in Great Britain via the Continent. He said that he did not know what it was proposed to do about it or whether it was known if a passenger came from an endemic area. Local systems were used, involving medical officers of health, to whom the addresses of passengers might be referred, in the event of suspicion of an outbreak. It would be an advantage if a system was used somewhat similar to that in Australia, where passengers were controlled at the port, instead of letting the passengers go all over the country.

PROFESSOR A. BALDWIN drew attention to the false security created by internal spraying of aircraft to control insects when they might well have been sheltering in some external recess.

Dr. Wiburd said that it was a problem and it had been taken account of in the past. There had been reports, from various sources, of insects carried in the undercarriage of the plane. It had been stated that when the plane touched down the insects flew out, although some people said that it was just a cloud of broken grass, dirt and dust and so forth; the fact remained that it was a possibility that the insects might have access to those parts of the plane which were not readily sprayed and could not be sprayed in flight.

AIR VICE-MARSHAL DALEY asked why it was that service vaccination and inoculation records were not accepted by the Egyptian and Pakistani Governments, even though service medical stamps were accepted.

Dr. Wiburd replied that it represented the position at the moment. The position was, of course, that Australia had always been willing to accept the certificates issued by the services if they gave the information, namely, the date of the vaccination and the reaction, but up to the present some countries were unwilling to accept that. The mention made of the acceptability of service certificates related to the new international regulations which had been adopted, but which did not come into force generally until October 1, 1952.

DR. F. S. PARLE asked whether it was thought necessary to have some insecticidal control of aircraft coming from the Murray Valley in view of the occurrence of Murray Valley encephalitis and its probable spread by mosquitoes. He also asked why there appeared to be inconsistency regarding yellow fever inoculation on arrival at Karachi from a Mediterranean area. In conclusion he drew attention to the ever-present danger of importing disease in the garbage from overseas aircraft, trichiniasis being a disease he had in mind. He felt that constant care was necessary by all overseas airline operators.

Dr. Wiburd replied, on the question of Murray Valley encephalitis, that he could not speak with any great authority on that. It was not a quarantinable disease so far. He believed that it was a disease whose reservoir was supposed to be in domestic animals; it had been discovered in horses, and possibly in birds. Although it was transmissible by mosquitoes, or believed to be, it was thought that it had been introduced to Australia by migratory birds. Dr. Wiburd did not think that the aeroplane could be incriminated as a source of Murray Valley encephalitis. With regard to the yellow fever certification, he said that yellow fever certificates were required from all persons who might, within ten days, have been within a yellow fever endemic area. On the question of refuse destruction, he said that very stringent regulations existed to prevent animals in Australia from gaining access to surplus or refuse foodstuffs. Provision was

made for the destruction by incineration of all refuse, and it was an offence against the regulations for refuse to be removed for any other purpose except incineration. It was specifically not allowed to be removed as pig food from any aeroplane or ship.

DR. S. M. MORSON asked if consideration had been given to establishing control areas in the form of airports on islands near the main point of entry. He said that by that means complete isolation of the first point of contact could be simply effected.

In reply, Dr. Wiburd said that there was once a provision that every aircraft coming into Australia should be submitted to measures of disinsection at the last overseas port of departure. Those requirements had been relaxed somewhat and the present provision was that the measures should be carried out in flight by specified and approved methods not less than thirty minutes before arrival at the first port of entry. Provision was made in the event of an epidemic or when it was deemed necessary for carrying out the operations immediately the plane landed, before either the crew or the passengers disembarked.

DR. BULTEAU asked if protective measures were taken to prevent entry of disease to Australia through cheese produced overseas. Dr. Wiburd replied that the importation of foodstuffs was prohibited except under certain precautions which were administered by a different department from his own. Any animal products were looked after by the animal quarantine branch in each State—in other words, by the Department of Agriculture for that State acting on behalf of the Commonwealth.

DR. PENNINGTON asked what quarantine measures were adopted to prevent migrants from arriving in Australia suffering from diseases such as tuberculosis.

Dr. Wiburd replied that it was not under the *Quarantine Act* that action was taken. It was carried out by the quarantine officer under the *Immigration Act*, and the provision was that when cases of diseases such as tuberculosis came to notice, they were notified to the Department of Immigration. The person concerned was declared a prohibited immigrant. He might be allowed to enter under a certificate of exemption if he required treatment, but the onus remained on the company that brought him in, whether it was a shipping or airline company, to take him out of the country as a prohibited immigrant.

DR. ANDERSON said that it was important for crew members to realize that vaccination did not give complete protection against smallpox. In his experience no difficulty had been found in entering Karachi as long as a person had been correctly documented. Concerning insect control, he said that the exterior of an aircraft was never treated with an insecticide. He asked Dr. Wiburd if there was to be any alteration in certification in relation to vaccination certificates so that practitioners other than those employed by the Department of Health could carry it out.

Replying to the last part of the question first, Dr. Wiburd said that with regard to any relaxation of the requirement of an inspection of a certificate he was not quite sure of the official attitude of the department towards the new regulations. The Australian Government might make the restrictions less onerous than they were at the present time. A move in that direction had been taken by recognizing in the State of Victoria all those who were public vaccinators, a group which embraced people in most of the larger country towns; they had been provided with an official stamp by the Commonwealth Health Department, and this they could impress on certificates issued by them, which would then be recognized for official purposes. With regard to the other point about the maximum requirements, Dr. Wiburd did not think that it was intended in the regulations that the three-year period of the validity of smallpox certificates would be intended to cover all cases. It was still open to a country to say that if a person came directly from a smallpox area evidence would be required that he had been vaccinated during a shorter period. That provision was in force at the present time against some parts of the world; for Korea and Japan it was required that vaccinations must have been carried out within six months. The other point was in connexion with yellow fever certificates. Knowing the route of the aeroplane ought to be sufficient, but, for example, the plane coming through Cairo might pick up transit passengers who had come up from South Africa and had come through the yellow fever area; the captain and the crew of the plane might have no knowledge of where the passenger had been within the last fourteen days. It was up to the passenger himself to make his own declaration, although it was envisaged in the new regulations that the form giving details of personal health and origins would be done away with, and it would not be required when the new regulations were adopted.

DR. LANE asked if there was any up-to-date index printed in Australia which would enable one to find out what the requirements were at the time being for any other country in the world.

Dr. Wiburd replied that the brochure which he had distributed contained all the information. There was also a larger one prepared in Geneva.

SURGEON-CAPTAIN L. LOCKWOOD asked what the interpretation and significance were of the various responses to vaccination; also what correlation there was between the various reactions and the degree of immunity.

Dr. Wiburd said that there had been a lot of discussion about the acceptability of what was known as the immunity reaction. In a great many cases it was maintained that an immunity reaction was not an immunity reaction or need not be an immunity reaction, but it might be an allergic reaction. The other type of reaction was the intermediate form—in other words, the accelerated reaction in which the states of vaccination proceeded to papulation, vesiculation, pustulation and scabbing, and at a very much more rapid rate than a primary vaccination. It indicated a lesser degree of immunity than was shown by the immunity reaction if that was accepted as a definite amount of immunity. The amount of immunity could be gauged by the time that the accelerated reaction took to reach its peak—the height of the reaction. An ordinary primary reaction reached its maximum on the average on the tenth day in the case of the person who had no immunity. If he had been vaccinated a long time previously—varying with the individual—he might lose some immunity and he might show a maximum reaction at the end of a week, five days or four days. When the reaction amounted to only a papule it was regarded as showing a considerable degree of immunity, but that same reaction might be obtained by inactivated lymph, which showed that the reaction by itself could not be relied upon. There were a great many cases in which a certificate was received stating that no reaction had occurred, a state of affairs contrary to experience in Australia. It was extremely unlikely on repeated vaccination to get no reaction, and Dr. Wiburd said that he could recall only two or three cases in the last five or six years in which it had not been possible to obtain a definite reaction on an Australian. People had been referred from various places with certificates of no reaction from local practitioners or from large city hospitals with the statement that they had been unable to obtain a reaction. Dr. Wiburd said that the lymph used by his department was always fresh and of high potency. It was flown direct from the Commonwealth Serum Laboratories, Melbourne.

DR. W. A. SELDON asked whether intradermal injection was acceptable as a means of producing successful vaccination.

Dr. Wiburd replied that if there was no appreciable scar it would be unacceptable. The method had been used on a fairly large scale in Brisbane recently. He had seen some of the results, but in a lot of cases there was no recognizable reaction, and such a reaction could not be certified.

Out of the Past.

In this column will be published from time to time extracts, taken from medical journals, newspapers, official and historical records, diaries and so on, dealing with events connected with the early medical history of Australia.

AN INQUIRY INTO THE DEATH OF A CONVICT.¹

Colonial Secretary's Office,
Sydney,
12 July, 1832.

James Laurence, Esq.,
Late Surgeon Superintendent,
Convict Ship John.

Sir,

With reference to my letter of 26th ultimo intimating in compliance with your request of the 9th that the Principal Superintendent of Police had been instructed to make Enquiry on Oath into your Conduct as regards the Death of John CLIFTON, a convict under your Superintendence, in consequence of drinking cold water while in a state of Exhaustion from the effects of washing the Deck in double Irons, with a Bed upon his Back for two Hours, a punish-

ment imposed on him for participating in an Attempt to set Fire to the Ship.

I have the honor to inform you that the Depositions taken in the above Matter have been submitted to His Excellency the Governor, and that the result of the Enquiry has been perfectly satisfactory to him.

I have, &c.,
ALEX. MCLEAY.

Obituary.

HENRY DOUGLAS STEPHENS.

At a meeting of the Melbourne Pædiatric Society held on September 10, 1952, at the Children's Hospital, Melbourne, DR. REGINALD WEBSTER delivered a memorial address on the late Dr. Henry Douglas Stephens. Dr. Webster spoke in the following terms:

In deputing me to express the Melbourne Pædiatric Society's tribute to the late Henry Douglas Stephens, you have laid on me a heavy responsibility, yet it is at the same time a privilege that I would not willingly forgo.

My feelings in anticipation of this meeting have been a strange and not easily supported complex of retrospection, depression, nervousness and pride. On the occasion of the loss by death of one who influenced the development of this hospital in the degree of Harry Douglas Stephens, it is but natural, if not inevitable, that one should become retrospective, and contemplative of the changed and ever-changing scene in the institution to which he gave the best of his exceptional powers, and which he held in the regard of Alma Mater. For fifty years he was identified with the Children's Hospital, in capacities ranging from the most junior to the most eminent, and during that period consummated a career which crowned him with well-merited distinction, and shed lustre on the institution to which he was so deeply attached.

The consciousness of personal loss, and the sharp reminder of the relentless progress of time inseparable from his passing, induce a sense of depression which it is difficult to surmount. The nervousness which has possessed me has been engendered by the knowledge that whatever I might succeed in saying as tribute to the unparalleled achievement and unchallenged status of Harry Stephens in the world of pædiatrics will be far from sufficient. The dominant feeling, however, is one of pride in having been honoured for so many years with a close association in both professional and extra-professional life by one of the high attainments and sterling personal attributes of him whose memory we are assembled to honour—Harry Douglas Stephens.

His exit from the stage on which he sustained the leading role for so long a time marks the severance of the last remaining link between the present establishment of the Children's Hospital and the order which prevailed under the original school of pædiatrics in Melbourne, the school which required its students to take the whole field of disease in childhood as their curriculum, and which, aided by the substantial contribution of Harry Stephens's own eager enthusiasm and avidity for knowledge, shaped him into the great "all-rounder" he was universally acknowledged to be.

He was appointed resident medical officer in 1901, clinical assistant in the out-patient department in 1903, and honorary medical officer attending out-patients in 1909. The only surviving member of the honorary medical staff, as constituted at the time of his appointment, is Dr. H. M. Hewlett, who conducted a clinic in the out-patient department until his interest in radiology led him to relinquish clinical work and follow his bent in developing the X-ray work of the hospital. Dr. Hewlett was the pioneer of the radiological service and the Children's Hospital's first honorary radiologist. At the time of which I speak the members of the honorary staff attended to both in-patients and out-patients as physicians and surgeons; no line of division was drawn between medical and surgical clinics in the out-patient department; all were "mixed", and in his in-patient work each honorary medical officer had his quota of medical and surgical beds.

As I have indicated, the pædiatricians of Melbourne at that time endeavoured to be all things to all children, but in 1914 it was decided that appointments should be made either to the in-patient or to the out-patient staff, that appointees to the in-patient staff should be either physicians or surgeons, but that members of the out-patient staff might continue as physicians and surgeons if they so desired.

¹ From the original in the Mitchell Library, Sydney.

Harry Douglas Stephens remained in charge of his out-patient clinic, which he retained on its original basis as serving the requirements of all sick children. Until his appointment as honorary surgeon to in-patients in 1920, "H.D.S." conducted an out-patient clinic than which surely none was ever more busy, and in which orthopaedic work of all kinds, all the surgery permissible in an out-patient department and every imaginable type of medical problem were represented. It is beyond my powers of expression to re-create in words the stimulating atmosphere of that comprehensive clinic, or to convey to any not privileged to have known it a proper idea of the incomparable diligence and driving force of its inspiring leader.

For many years after he joined the indoor staff as honorary surgeon he maintained a "follow-up" clinic, and oblivious of the passage of time in the interest in his work which possessed him, was to be found in the out-patient department every Friday afternoon until a very late hour. His work as honorary surgeon to in-patients was of incredible volume and unsurpassed in quality. He was as eager to impart knowledge as to acquire it, and the time spent with students before proceeding to deal with the quota of operations listed for the morning handicapped him in meeting his appointments with his private patients to the extent that he did not reach his rooms until 2.30 or 3 p.m. While he was still a member of the out-patient staff he discharged much of the indoor emergency surgery, and during his long term as honorary surgeon attending in-patients he rarely failed to answer a call for immediate consultation or operation. Surgical crises take no heed of time, nor did Harry Douglas Stephens; for year succeeding year he was available at all hours of the day and night, sacrificing much in loss of family life. His physical stamina was as amazing as his energy was prodigious, and as long as I knew him was a subject of wondering comment by all who had knowledge of his many activities.

The lapse of years determined his retirement from the honorary staff of the Children's Hospital in 1939. He had then entered his seventh decade, but was just as alert, just as vivifying and dynamic as his friends and colleagues had always known him to be. Almost immediately on his retirement descended the catastrophe of the second World War, and the depletion of the staff of the hospital was such that the Committee of Management gratefully accepted the offer of Harry Douglas Stephens to resume, in an acting capacity, the post he had but recently relinquished. And so he returned to the institution which had for so long been an integral part of his life, and continued with no apparent diminution in energy or devotion to the duties of his office until 1946. When he finally retired in 1946, at the age of sixty-nine years, the burden of his unprecedented service and never to be excelled achievement appeared to have effected little reduction in his vigour and capacity. Physically and mentally he seemed to defy the cumulative power of the mounting years to impose any limitations upon him. For the remainder of his life he retained a large and exacting private practice, of the all-embracing scope of the school of pediatrics in which he trained and of which he proved such a distinguished graduate.

After his transference from the active to the consulting surgical staff he was elected a member of the Committee of Management, an office which he valued and sustained capably and conscientiously until his death. Unaware of the approach of the Rider on the Pale Horse, he died as he would have wished, attending to the work which was for him the very essence of life.

To all who have been attached to the Children's Hospital, or who have passed through its clinical school, "H. Douglas Stephens" spells a great name, but not many now remain whose association with him was sufficiently close to have favoured them with an intimate view of the career which led eventually to his unanimous recognition as the doyen of pediatrics in the Southern Hemisphere, and his election amid general acclaim as the first President of the Australasian Pediatric Association. Perhaps of his surviving contemporaries I should be best qualified to describe that career, doing justice to his pediatric erudition and its translation into practice in which medical insight vied with surgical skill. But, handicapped by the poignancy of memories which crowd upon me as I speak, and frustrated by the inadequacy of any language within my capacity, I am not equal to the privilege.

In 1904, in the third year of his association with the Children's Hospital, and while a clinical assistant in the out-patient department, Harry Stephens was appointed honorary pathologist, which was in practice honorary morbid anatomist, for the hospital had no department of pathology other than a mortuary, and all work of a nature such as we

now describe as clinical pathology was sent to the bacteriological laboratory of the University of Melbourne. I am reliably informed that Harry Stephens used to arrive at the hospital at a very early hour in order to complete the autopsy work for the day in time to discharge his duties as demonstrator of anatomy at the University. His post-mortem work was done under conditions that would now be regarded as primitive, but to this day there are in the museum irreplaceable specimens which he secured long before my advent. I have in mind particularly specimens showing scorbutic subperiosteal hæmorrhage. He never lost his interest in anatomy, and as long as I was in the pathology department, he used to ask at frequent intervals if I could provide him with a subject for dissection.

When I undertook the supervision of the newly created department of pathology in 1914, the star of Harry Douglas Stephens was already high in the firmament. The senior members of the honorary medical staff whom I remember best, and for whom I often heard Harry Stephens express his respect and admiration, were Peter Bruce Bennie, A. Jeffreys Wood and Frank Hobill Cole. Peter Bennie was a clear, cold thinker, possessed of a mind which found recreation in mathematics, and was perhaps a little too detached and dispassionate for success in practice. I will always remember Dr. A. Jeffreys Wood as a diagnostician and lucid clinical teacher, with an unfailing kindly interest in younger men, and his own inimitable way of gaining the confidence of a child. No man ever sought less of the limelight than Frank Hobill Cole, but his capacity and wisdom, kindness, patience, forbearance and generosity in judgement of his fellows were such that no junior should have failed to revere him. The influence of these giants of a former day was a strong factor in guiding the rapid development of Harry Stephens, and extended to me, trailing more than a decade behind him.

I have often wondered in which particular instance of his versatile clinical activities Harry Stephens was at his best. Was it in the finished artistry with which he repaired a hare-lip or cleft palate, in the dauntlessness and resource with which he proceeded to resect an irreducible intussusception, or in the clean dissection and meticulous attention to hæmostasis which he brought to a tonsillectomy? But, paraphrasing Rudyard Kipling, one might ask: What should they know of Stephens who only the surgeon know? He would turn from an abdominal operation to an orthopaedic problem, proceed out to a medical consultation, adjust a difficulty in infant feeding on the way home, and be equally in his element in any of these capacities. But although it is not easy to say which of his many facets showed "H.D.S." at his best, I have always fancied that I knew the phase of his work which he most enjoyed. That, I should say, was a clinical demonstration. I do not think that he was ever as happy in reading a paper, or delivering a set lecture or presidential address, as when, "compassed about with so great a cloud of witnesses", he had a living clinical entity from which to demonstrate in circumstances stripped of the trappings of a formal meeting. Such conditions as obtained at the annual conjoint meeting of the Pediatric Society with the Victorian Branch of the British Medical Association elicited his best from him. Given a child in whom he could demonstrate concrete clinical points, the large gallery that he invariably had and a rapid fire of questions, he rejoiced "as a strong man to run a race".

Most of the contributions of Harry Douglas Stephens to the medical literature of his day were presented to successive sessions of the Australasian Medical Congress, as originally constituted and after its reorganization under the aegis of the British Medical Association.

In 1908 there occurred in Victoria an epidemic of poliomyelitis, which he described in a paper¹ read at the session of Congress held in Melbourne in that year, as far exceeding in extent any previously recorded in the Southern Hemisphere. His account of the outbreak, based on his investigation of 135 of its victims, is notable for its attention to the epidemiology of poliomyelitis, details of efforts to identify the infecting agent, and an exhaustive discussion of the symptomatology of the disease.

To the Section of Diseases of Children of the Eighth Session of the Australasian Medical Congress held in Brisbane (1920) he contributed a report² of the recovery of a premature baby from the hazardous operation of resection of bowel, necessitated by strangulation of a loop in a hernial sac.

¹ *Intercolonial Medical Journal of Australasia*, Volume XIII, 1908, page 573.

² *Transactions, Australasian Medical Congress, Eighth Session, 1920.*

In the organization of the First Session of the Australasian Medical Congress (British Medical Association), held in Melbourne in 1923, he worked with Dr. (now Major-General) F. Kingsley Norris as joint honorary secretary of the Section of Diseases of Children, and for the Second Session of the Australasian Medical Congress (British Medical Association), Dunedin, 1927, he was elected Vice-President of the Section of Diseases of Children.

Harry Douglas Stephens served his colleagues in the medical profession for many years as a member of the Council of the Victorian Branch of the British Medical Association, and was for a period honorary librarian. On his retirement from the office of President of the Victorian Branch of the British Medical Association in December, 1926, he delivered a thoughtful and discerning address¹ in which he discussed public health, maternity hygiene and child welfare, the education of the public in medical matters, the changing character of public hospitals, post-graduate teaching, and the alterations then taking shape in conditions of practice.

On the memorable occasion of the annual meeting of the British Medical Association in Melbourne in September, 1935, Harry Stephens contributed a paper on hare-lip.² Having witnessed literally hundreds of his operations for the repair of hare-lip and cleft palate from the favourable viewpoint allotted the anaesthetist, I may perhaps be permitted to say that I cannot imagine more artistic work than he performed as a matter of routine in this field of plastic surgery, but he found in himself his most exacting critic, and often expressed dissatisfaction with what seemed to me to be a flawless operation.

As President of the Section of Diseases of Children in the Fifth Session of the Australasian Medical Congress (British Medical Association) held in Adelaide in August, 1937, he chose as the subject of his address "Acute Abdominal Conditions in Children"³—an authoritative exposition based on his own experience and profitable reading for all engaged in paediatric practice at the present day. It was my impression that he did not much enjoy formal presentations, but revelled in clinical demonstrations. The reports of the meetings of the Melbourne Paediatric Society to be found in the files of THE MEDICAL JOURNAL OF AUSTRALIA include accounts of his very numerous demonstrations and contributions to discussion, records which embody a wealth of paediatric lore and wisdom.

The sustained interest and vitalizing influence of Harry Douglas Stephens in the Melbourne Paediatric Society need no emphasis for any who have followed its proceedings. I am indebted to Dr. H. Boyd Graham for the information that a minute extant in the records of the Medical Society of Victoria shows that in 1905 Harry Stephens advised the committee of that body of the formation of the Melbourne Paediatric Society, now, therefore, in its forty-seventh year. For the first twenty years of the Society's existence Harry Stephens was its energetic and stimulating honorary secretary, and that it should have flourished in a manner known to all who have inclined to the study of children, and of the illnesses of body and mind which may overtake them, is due in large measure to the executive ability and contagious enthusiasm of its first honorary secretary, who, as one of those who kindled the torch, was resolved on keeping it aflame and never permitted it to flicker. After his retirement from the active surgical staff and until the end of his life, he maintained his interest in the Paediatric Society, continuing to attend its monthly meetings long after he had reached an age which most of us would consider a title to exemption; but his unquenchable interest in paediatrics would never have permitted such a claim to occur to Harry Douglas Stephens.

There was a quality in Harry Stephens without which, I venture to suggest, not even his superhuman energy and limitless zeal could have carried him so far, and that was his wonderfully receptive and plastic mind. No trace of the mental inflexibility and conservatism against which we all have to guard as the years tick over was ever apparent in him. In the close contact of thirty-five years which it was my good fortune to have maintained with him, I never detected any diminution in his enterprise in exploring new fields, or in his eagerness to sift the gold from the dross in the manifold innovations in the theory and practice of medicine and surgery. It was not until a comparatively recent date within the last two years of his life that I

became aware of a relaxation in the alertness which had always distinguished him; he seemed not so much, in colloquial but expressive phrase, "on his toes" as had been his wont all his life. In the course of his fifty years of practice he witnessed amazing developments in medical science; he saw acute osteomyelitis robbed of its lethal power and stripped of much of its crippling capacity; he witnessed the successful application of surgery to such congenital malformations as cardiac defects and tracheo-oesophageal fistulae; he lived to see children stricken by tuberculous meningitis recover.



The view taken by the individual of Sir William Osler's tenets concerning the relative uselessness of a man above forty years of age and the absolute uselessness of the sexagenarian, is no doubt determined largely by the decade in which his chronology places him, but in propounding his belief Osler recognized the brilliant exceptions, and in his scholarly way adduced a translation of a passage of Cicero to the effect that the minds of such "stand out of reach of the body's decay". Of the Ciceronian elect was Harry Douglas Stephens, and it was his ever young outlook which enabled him to utilize his rare gifts to such great advantage.

It is a sobering and corrective thought that the unit counts for comparatively little in a complex system. This great hospital—and the index of its greatness is the quality of the men and women who have laboured in unremitting devotion to its service—must go on, advancing from strength to strength, unretarded by the loss of even its most eminent alumnus. That none of us is indispensable is a rule which operates with the force of biological law, and an individual may have achieved fame for himself and renown for his hospital, but the great system, to the evolution of which he may have contributed even in the measure of Harry Douglas Stephens to this hospital, will sustain his loss and continue to function; sorrow will remain with his contemporaries and grief with his intimates, but when they in their turn shall have answered the call to traverse the valley of the shadow, little will be left. Hence the value of a memorial, to maintain aglow the once brilliant light, otherwise destined to be dimmed, obscured, even extinguished by the mists of

¹ THE MEDICAL JOURNAL OF AUSTRALIA, Volume II, 1926, page 821.

² *Ibidem*, Volume I, 1936, page 494.

³ *Ibidem*, Volume I, 1938, page 465.

the lengthening years. A recently completed additional operating theatre in the present Children's Hospital has been named "The Henry Douglas Stephens Memorial Operating Theatre", and the memorial is to be perpetuated in similar form in the New Children's Hospital, now in an advanced stage of planning. Let the epitaph of him who served our hospital in a manner transcending any earthly terms of commendation be written in those of the eloquently simple New Testament approbation: "Well done, good and faithful servant."

SIR HUGH DEVINE writes: When Dr. Harry Douglas Stephens died, the Australian medical profession lost one of its greatest children's surgeons, one whose name will be engraved on the hearts of thousands of mothers. Dr. Stephens was unique in that he had devoted his whole life to nothing but children's work, that he was naturally and temperamentally suited for this work, that his heart and soul were in it, and that he had accumulated a great knowledge and wisdom, and out of this he had developed a science and fashioned a craft of surgery particular to children.

He was born of gentle parents, and his vocational leanings to medicine—to its service to others—fell on fertile ground, especially as the masters of the Camberwell Grammar School, where he was being educated, prophesied for him great things. At the University he showed a flair for anatomy and won the exhibition in this subject in third year—one of the early stepping-stones to a surgical career. To this in his final year he added high honours in medicine and surgery, came well up on the honour list, and won a junior resident appointment at the Melbourne Hospital. He left this hospital to take up a resident position at Saint Vincent's Hospital. Later he accepted a resident medical appointment at the Children's Hospital, and then for him, in one way or another, began a loyal and faithful association with this hospital which was never to be broken until his death fifty years later.

The work at the Children's Hospital fascinated him, for he loved children, and the life was intensely interesting, for at this particular time the resident medical officer staff was brilliant: it was a vintage year. Geoffrey Owen, A. E. Rowden White, Harry Summons, Bobby Sutton, Konrad Hiller and Frank Andrew were some of the resident medical officers.

When Dr. Stephens completed this residentship, he was appointed as an honorary clinical assistant to out-patients, and thus he became indoctrinated with the old-time pediatric principles—which were perhaps not unwise—namely, that to be a good pediatrician you had to be a good physician as well as a good surgeon. Very soon he was appointed an out-patient attending honorary medical officer, and it was not long before his happy and congenial manner, his Christian and kindly outlook, and his obvious knowledge and proficiency, won the hearts and confidence of the mothers. His clinic flourished. Students benefited by his knowledgeable and lucid teaching.

His in-patient colleagues, with whom he was closely associated, were prominent in the profession of pediatrics. Early he came under the influence of Dr. Hobill Cole, who had been an attending honorary medical officer at the Children's Hospital since 1893. Dr. Cole was an interesting and cultured physician, with an old-time medical philosophy and a large private practice in diseases of children. Somewhere about this time he became an assistant to Dr. Cole in his private practice. In Dr. Cole, Dr. A. Jeffreys Wood and Dr. Peter Bruce Bennie, Harry Stephens found experienced and wise mentors.

It was with a background such as this that he systematically set about preparing himself for the higher spheres in pediatrics; for he was now wedded body and soul to children's work. He realized that it was his *milieu*. Indeed he was to be wedded to it more than he realized, for he was to marry Dr. Hobill Cole's daughter, a lady who inherited the gentle genes of her erudite father as well as those of her charming mother—a descendant of Jenner. Dr. Stephens's aim was to develop that phase of children's surgery which included developmental anomalies, orthopaedics and kindred afflictions of childhood—serious affections of childhood which up to this time had attracted little surgical attention. We have evidence that he had this in his mind, in that he accepted the onerous and responsible position of pathologist to the hospital. He knew that the living and the dead pathology which he would see in all its phases as hospital pathologist was the soundest foundation on which to build not only his medical but also his surgical pediatrics. In this he followed the teaching of his great friend, Sir Richard Stawell. He held this position with great credit for fourteen years until the great increase in the volume of this work

required a full-time pathologist, and Dr. Reginald Webber was appointed. Dr. Stephens was then made consulting pathologist, a position which he held till his death.

In 1903 he took his M.D. degree. Then, to develop the surgical side in his post-graduate pediatric study, he worked for and gained his M.S. degree in 1904, when he was twenty-seven years old. In those days there were few who held an M.S. degree. His name stands fifteenth on the Master of Surgery register of the University of Melbourne.

Dr. Stephens did much for pediatrics, and for surgery and medicine in general. In him young medical men found inspiration, guidance and help in their efforts to improve their professional calibre by post-graduate study and overseas travel.

And this is personal. My friendship with Harry Stephens takes me back to 1904. He was always a simple, kindly, lovable soul. He could see no evil in anyone. He had no enemy. But with all this no man had more steadfast principles or a finer character. His devotion to duty was incredible. Day or night he was never late for a hospital operation. He never let a patient down. He was a beacon by which young doctors could well steer.

Harry Stephens had a full and enjoyable life in that he achieved to the full the life he had patterned for himself. On Sundays he would sometimes wander in for a yarn. Walking back with him on one not far distant Sunday, I heard him say half to himself and half to me: "I know we all must die, but when I die I will die contented . . . and I will die working." "I have loved my family . . . I have loved my work . . . I have loved my home . . . I don't know that I could have done more with life . . . perhaps I might have done a little more fishing." I knew that he had done all that he could with the life that was given him; he, with the humility which is given only to the really great, was not sure.

DR. KONRAD HILLER writes: My first association with Harry Stephens was when we were resident medical officers at the Children's Hospital, where he was then the senior member. It was not long before a friendship was formed which terminated only with his death.

My memory of him then was of a man of immense energy and enthusiasm, seeking to increase his knowledge of children's work in every way that he could. It was this restless striving, and the experience gained thereby, that set the foundation of his future career as a pediatrician, and it was at the Children's Hospital, which he served for so many years, that he took full advantage of the opportunities presenting, and this brought him that fame which he so richly deserved.

When he left the Children's Hospital as a resident medical officer to assist Dr. F. Hobill Cole, himself a pediatrician, he still retained a close association with that institution and soon joined the honorary medical staff. Released from the duties of a resident medical officer, his restless soul sought additional activities to occupy his spare time. Amongst these he became secretary of the Melbourne Medical Association. The membership of this body consisted of medical men in practice in and about Melbourne, and its functions were largely social. There are probably some that still remember the river excursions on Saturday afternoons, the visits to factories and other places of interest, and the annual dinners. These were all originated and organized by him, and it was because of his drive and enthusiasm that they were attended with such success.

In the year 1910-1911 we were associated in an investigation into the prevalence of syphilis in Melbourne. The scheme was initiated by the then Chairman of the Board of Public Health, Dr. Burnett Ham. A committee including Professor Sir Harry Allen, Sir James Barrett and others drew up a plan of campaign, in which it was arranged that the Wassermann test, which had been accepted as a specific test of that disease, should be performed at the bacteriological laboratory of the University for a period of twelve months for all medical men and institutions desirous of assisting the scheme by sending blood specimens in actual and suspected cases. In this Stephens did a tremendous amount of work at the Children's Hospital by sending specimens of blood and post-mortem specimens to the department of pathology, where the late Dr. Gilbert Lamble made the necessary examinations for evidence of the disease.

The Melbourne Medical School Jubilee was held in 1914, and Stephens as secretary assisted largely in its success by his organization of demonstrations, social functions and so on associated with this event.

From then onward our professional paths separated, but not our friendship. To others more qualified than I is left the task of recording his steady progress to the high position

he attained in this community and beyond, as the leading paediatrician of his day.

Looking back on those years associated with him so closely, I regard them as amongst the happiest of my life. He was always full of fun, enjoyed good jokes and told many with obvious almost puckish enjoyment; but when signs appeared which portended the end he met the future bravely, and he died, as he had wished, in harness.

Vale, Harry Stephens, sturdy friend and delightful companion!

DR. A. E. ROWDEN WHITE writes: Australia has lost by the death of Henry Douglas Stephens on June 17, 1952, one of its most eminent children's specialists, whose name was favourably known in all the States. It is only natural that the writer feels the personal loss of a beloved friend very deeply, and at this time of one's grief and in the limited space permitted he can do little more than record an outline of Stephens's professional career and his lasting influence on the community he served so faithfully. It is a great privilege to have been associated with him during his term of two years of office, 1901-1902, as senior resident medical officer at the Children's Hospital, Melbourne, when Geoffrey Owen was second and myself third resident medical officer. At that time the senior resident medical officer carried great responsibilities in having to do the work of medical superintendent (such a post was not established until a few years later) in addition to his own duties. One looks back half a century with great pleasure and pride in being associated with a young man of prodigious energy and capacity for work, whose organizing ability seemed unlimited, and whose happy and genial disposition and sterling character were outstanding—this early impression in one's life created a spirit of comradeship and understanding which was enhanced and developed during the long years of association when we were senior members of the honorary staff. In 1901 the main building of the hospital had been the home of the late Sir Redmond Barry, and the large and capacious rooms were reconditioned for medical and surgical wards and provided quarters for the resident staff. During the last few weeks of Dr. Stephens's time in residence the new Princess Mary Ward was completed and was opened by the Duchess of York, now Queen Mary, grandmother of Queen Elizabeth II. Harry (as he was called affectionately by everyone) then

travelled to the United Kingdom and United States of America, to further his studies in children's diseases, and after his return was appointed a clinical assistant to Dr. H. M. Hewlett and shortly afterwards to a full appointment to the honorary staff in the out-patient department of the hospital. It was a good appointment, as his interest in paediatrics was amazing, and for fifty years he did not spare himself to give his knowledge and experience to meet every urgent call.

He wrote many articles for THE MEDICAL JOURNAL OF AUSTRALIA and delivered several addresses at different sessions of the Australasian Medical Congress. He founded the Melbourne Paediatric Society and was its honorary secretary for twenty years. This was an important innovation, and its success was largely due to the enthusiasm of "H.D.S.". His stimulating influence on the Medical Society of Victoria when he was its honorary secretary made it one of the most successful periods of its history. Harry was indefatigable, and after several years as a member and councillor of the British Medical Association (Victorian Branch) became its President.

He served both branches of paediatrics (medical and surgical) in his long and valuable career in private practice and in the out-patient department of the Children's Hospital; he accepted the post of honorary in-patient surgeon in 1914.

He was a clear thinker and had the great ability to expound his subject, be it medical or surgical, based on his profound reading and experience in anatomy and pathology, and his clinical lectures and demonstrations were a joy to his students and post-graduates alike. He gave much care and time in the preparation of his written subjects, which in the years to come will always have an authoritative ring of the period of his time.

He became an apt pupil of the giants of the hospital at the beginning of this century: Dr. Peter Bennie, with his plastic surgery for hare-lip and cleft palate, and especially the epochal introduction of Thomas's splint work; Mr. Hamilton Russell, with his teaching on congenital hernia and bone work; Dr. F. Hobill Cole, with his methods in the surgery of intussusception. And yet withal, the astonishing revolution in medicine and surgery in the last twenty-five years found Harry as receptive, as always, for progress, and it was little wonder that at the Australasian Medical Con-

DISEASES NOTIFIED IN EACH STATE AND TERRITORY OF AUSTRALIA FOR THE WEEK ENDED AUGUST 23, 1952.¹

Disease.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	Northern Territory.	Australian Capital Territory.	Australia.
Acute Rheumatism	1	..	..	..	1
Amoebiasis
Ancylostomiasis	3(8)	..	..	..	..	..	3
Anthrax
Bilharziasis
Brucellosis	1	..	..	..	..	..	1
Cholera	2	..	..	..	2
Chorea (St. Vitus)
Dengue
Diarrhoea (Infantile)	1	..	..	1
Diphtheria ..	5(2)	2(1)	7(3)	..	1(1)	..	..	..	15
Dysentery (Bacillary)	1(1)	7(6)	..	..	..	1	..	9
Encephalitis	1	..	1
Filariasis
Homologous Serum Jaundice
Hydatid
Infective Hepatitis	3(2)	..	..	11(9)	..	..	..	14
Lead Poisoning
Leprosy
Leptospirosis	4(1)	..	..	..	..	..	4
Malaria	1(1)	..	..	..	..	..	1
Meningococcal Infection ..	9(7)	2(2)	..	..	1(1)	1	..	..	13
Ophthalmia	6	..	..	..	6
Ornithosis
Paratyphoid
Plague
Polymyositis ..	4(1)	3	5(3)	7(3)	..	..	..	..	19
Puerperal Fever	1	1	..	..	..	..	2
Rubella	18(14)	..	..	15(1)	..	..	1	34
Salmonella Infection
Scarlet Fever ..	16(13)	16(13)	5(5)	5(3)	3(2)	3(1)	..	..	48
Smallpox
Tetanus	1	..	..	..	..	..	1
Trachoma
Trichinosis
Tuberculosis ..	41(33)	11(7)	5(4)	9(7)	9(6)	5(1)	1	..	70
Typhoid Fever
Typhus (Flea-, Mite- and Tick-borne)	1(1)	..	..	..	..	..	1
Typhus (Louse-borne)
Yellow Fever

¹ Figures in parentheses are those for the metropolitan area.

gress at Brisbane he was elected Chairman of the Pædiatric Section, and in 1950-1951 he delivered the first address of the newly formed Australian Pædiatric Association. On his retirement he became an honorary consulting surgeon and a member of the Committee of Management of the Children's Hospital, where he became a tower of strength with his great knowledge and vast experience. I am also proud of the many years of association in infant work when "H.D.S.", Stewart Ferguson and myself were appointed honorary physicians to the Berry Street Foundling Hospital and Infant Asylum on the retirement of that famous pædiatrician, Dr. Jeffreys Wood, who had established and built up that fine institution for the care of well and healthy babies.

This fine life came to an end suddenly while he was at work in his consulting room, his last endeavour to give service to an afflicted child. It is a way he would have chosen—service to the young folk he loved so much.

Sincere sympathy is extended to his widow (formerly Miss Eileen Hobill Cole), son and daughters.

GILBERT WILLIAM BARKER.

We regret to announce the death of Dr. Gilbert William Barker, which occurred on September 6, 1952, at Subiaco, Western Australia.

HUGO STRAUSS.

We regret to announce the death of Dr. Hugo Strauss, which occurred on September 7, 1952, at Sydney.

Post-Graduate Work.

THE POST-GRADUATE COMMITTEE IN MEDICINE IN THE UNIVERSITY OF SYDNEY.

Clinical Meeting at Balmoral Naval Hospital.

THE Post-Graduate Committee in Medicine in the University of Sydney announces that a clinical meeting will be held at the Balmoral Naval Hospital on Tuesday, October 14, 1952, at 2 p.m., when Dr. H. Windsor will speak on "Fundamental Principles in the Diagnosis of Chest Disease". Clinical cases will be shown after the lecture. All members of the medical profession are cordially invited to attend.

Notice.

COMPLIMENTARY DINNER TO SIR GORDON GORDON-TAYLOR.

A COMPLIMENTARY DINNER will be tendered to Sir Gordon Gordon-Taylor, K.B.E., C.B., M.A., by members of the medical profession in Sydney on Tuesday, September 30, 1952. The dinner will be held at the Royal Sydney Yacht Squadron, Kirribilli, at 6.30 for 7 p.m. Dress, black tie. Those desiring to attend should notify Miss A. Madden, 131 Macquarie Street, Sydney (telephone BW 4751), before September 26.

Nominations and Elections.

THE undermentioned have applied for election as members of the New South Wales Branch of the British Medical Association:

- Buckley, Frank John Stanwell, M.B., B.S., 1948 (Univ. Sydney), c.o. Bank of New South Wales, 47 Berkeley Square, London, W.1, England (temporary).
- Bennett, Pamela Marjorie, M.B., B.S., 1952 (Univ. Sydney), c.o. Bank of New South Wales, 47 Berkeley Square, London, W.1, England (temporary).
- Sullivan, Neville Nelson, M.B., B.S., 1951 (Univ. Sydney), 295 Princes Highway, Carlton, New South Wales.
- Ament, Leon, registered in accordance with the *Medical Practitioners Act, 1938-1950*, Section 17 (1) (c), Ungarie, 5S, New South Wales.
- Bow, Verner William, M.B., B.S., 1948 (Univ. Sydney), 40 Carlisle Street, Ashfield, New South Wales.

ten Seldam, Rolf Edvard Jan, registered in accordance with the *Medical Practitioners Act, 1938-1950*, Section 17 (2), Department of Pathology, University of Sydney.

Taylor, Godfrey Unwin, M.B., B.S., 1951 (Univ. Melbourne), 3 R.A.A.F. Hospital, Richmond, New South Wales.

The undermentioned have applied for election as members of the South Australian Branch of the British Medical Association:

Pryor, Colin Hutson, M.B., B.S., 1952 (Univ. Adelaide), 3 Devonshire Street, North Walkerville, South Australia.

Mickan, John Herbert, M.B., B.S., 1952 (Univ. Adelaide), 25 Gertrude Street, Brooklyn Park, South Australia.

Barnes, David Thomas, M.B., B.S., 1951 (Univ. Adelaide), 11 Phillips Street, Somerton, South Australia.

Diary for the Month.

SEPT. 23.—New South Wales Branch, B.M.A.: Ethics Committee.

SEPT. 24.—Victorian Branch, B.M.A.: Council Meeting.

SEPT. 25.—New South Wales Branch, B.M.A.: Branch Meeting.

SEPT. 26.—Queensland Branch, B.M.A.: Council Meeting.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Medical Secretary, 135 Macquarie Street, Sydney): All contract practice appointments in New South Wales.

Victorian Branch (Honorary Secretary, Medical Society Hall, East Melbourne): Associated Medical Services Limited; all Institutes or Medical Dispensaries; Australian Prudential Association, Proprietary, Limited; Federal Mutual Medical Benefit Society; Mutual National Provident Club; National Provident Association; Hospital or other appointments outside Victoria.

Queensland Branch (Honorary Secretary, B.M.A. House, 225 Wickham Terrace, Brisbane, B17): Brisbane Associated Friendly Societies' Medical Institute; Bundaberg Medical Institute. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL or position outside Australia are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.

South Australian Branch (Honorary Secretary, 178 North Terrace, Adelaide): All Contract Practice appointments in South Australia.

Western Australian Branch (Honorary Secretary, 205 Saint George's Terrace, Perth): Norseman Hospital; all Contract Practice appointments in Western Australia. All government appointments with the exception of those of the Department of Public Health.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

All communications should be addressed to the Editor, THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, New South Wales. (Telephones: MW 2651-2.)

Members and subscribers are requested to notify the Manager, THE MEDICAL JOURNAL OF AUSTRALIA, Seamer Street, Glebe, New South Wales, without delay, of any irregularity in the delivery of this journal. The management cannot accept any responsibility or recognize any claim arising out of non-receipt of journals unless such notification is received within one month.

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